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Captain Albert A. Baray

15th AAA AW Battalion (SP)

Captain Henri F. Wrobleski
Captain George W. Eddy
Captain Cesere R. Freda
Captain William O. Norris (Chap.)
Captain Charles H. Bland
1st Lt. Matthew Dadich
Sfc. Richard S. Benjamin
Sfc. Wayne M. Robison
Sfc. Joseph D. Leonhart
Sgt. Calvin E. Pressley
Sgt. John E. Johnson
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PURPLE HEART AWARDS

14th AAA Group

Sfc. Richard E. McClanahan

15th AAA AW Battalion (SP)

Cpl. Harold P. Martinell
Cpl. Maurice D. Knollhoff

COMMENDATION RIBBON

14th AAA Group

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15th AAA AW Battalion (SP)

Captain Harry Postol
M-Sgt. Alvin B. Aubert
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SUPPLY: WORLD WAR II

To The South Pacific—Fall 1942

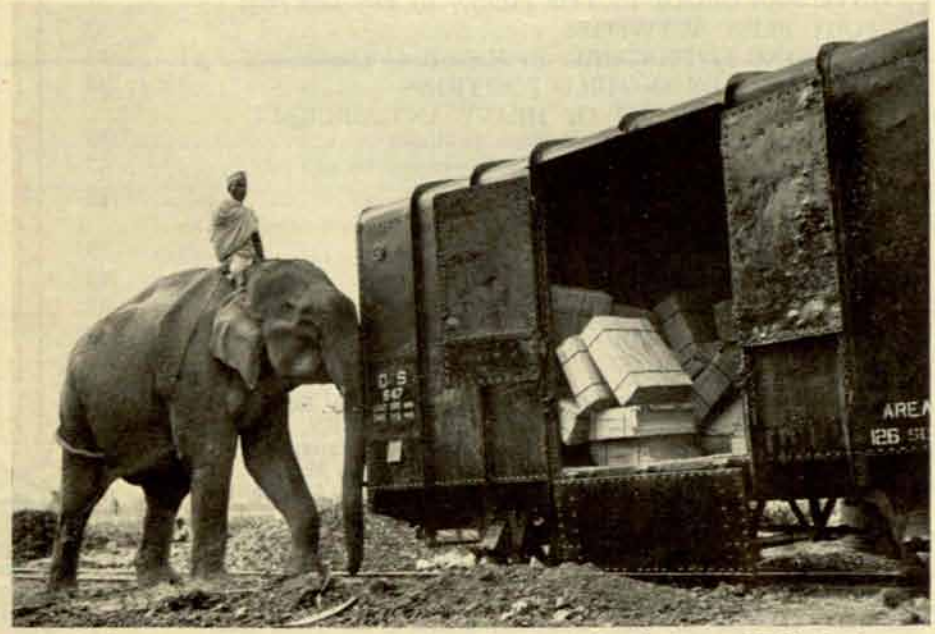
By LT. GEN. LeROY LUTES

THE shipping situation was getting more and more critical—a matter of primary concern to General Somervell, the Chief of Transportation Major General Charlie Gross, and myself. Not only were we required to maintain the large forces in North Africa, in the South and Southwest Pacific, but we were using considerable tonnage for lend-lease supplies to Russia (through Persia); for construction materials, airplanes, bombs to the United Kingdom for General Spaatz' bombing operations against Germany; and also all types of supplies and equipment to the United Kingdom for the build-up against the day when we could invade the Continent from the United Kingdom Base. Lend-lease supplies for China and military supplies for our forces in China and Burma were being shipped to and through India.

These huge, far-flung operations strained our shipping to the breaking point. We had to weigh the priorities of all these operations carefully and allocate shipping to each area of the world in consonance with the relative importance of the operation. Although the actual loading and movements of ships were the function of the Chief of Transportation, it was my responsibility to see that the proper supplies and equipment were moved to the ports and overseas in accordance with priorities and within time limits; in other words, to coordinate and supervise the general operations of the Army Service Forces.

The tight situation in ship tonnage capacity made it mandatory that throughout the world our overseas commanders unload their ships promptly and return them to the United States.

There was always the temptation of overseas commanders to hold the ships, either for storage purposes or to further their own immediate military operations. This was natural. Each of them considered his own operation of primary importance, and was not too concerned about the situation in the other parts of the world unless we were aggressive in checking up and demanding efficient operations.



Elephant power moves supplies over the Bengal and Assam RR in India.

On his first flight to the Southwest Pacific, General "Hap" Arnold, in 1942, noticed a huge congestion of allied shipping in the harbor of Noumea, New Caledonia. As an air officer, he considered this group of ships a fine bombing target for the enemy, and on his return to Washington growled to General Somervell about it. Whereas "Hap" was interested in this matter because of the danger from air bombing, we seized the information with alacrity because we needed those ships to carry cargoes. We had been complaining to the South Pacific Commander of Army Ground and Air Forces (General Harmon) about the slow return of his ships. However, the area was under supreme command of Admiral Nimitz and local command of Admiral Ghormley. General Somervell directed me to go to the South Pacific at once to ascertain the reason for this shipping congestion and to take such action as I believed necessary to straighten it out. As an additional mission, I was to proceed on to Australia and confer with General MacArthur on his present and future plans and requirements. This later was to prove to be a very interesting conference.

General Arnold advised me that a new special plane (a C-87) would be provided for me at Hamilton Field near San Francisco and advised me to keep in touch with the commander of that field concerning its readiness and time of flight.

On obtaining the probable date of readiness, I proceeded to San Francisco, taking with me Major Richard D. Myer of the Transportation Corps. We arrived at Hamilton Field about 9:00 p.m. for a departure at 10:00 p.m. All flights across the Pacific were then made at

night for two reasons. First, because the navigators plotted the course by observations of the stars; and secondly, because if the navigator failed in accuracy for any reason, the daylight would be available at the last of the trip to permit searching for the island destinations. It should be remembered that in 1942 radio "beams" were not available for our fliers, and orders were to fly with silenced radio in order that the Japs could not easily locate our planes or bases.

On arrival at the huge airplane, we found the crew trying to close a valve in the gasoline tanks on the right wing. Gasoline was running freely and the crew were mumbling against the plane. They did not like this model plane and thought it had not been thoroughly tested. It was a good crew. The Captain of the ship was William McCray, the Navigators Captain Ball and Lieutenant Hansman, all ex-American Airline men. The Assistant Pilots were Captains Barrow, Allen and Wickland.

After an hour's tinkering, the leak was stopped. Several passengers for Hawaii arrived, we got our luggage aboard, were briefed on how to wear the "Mae West" life preserver in water—should we meet disaster. Also we had to carry side arms and, of all things ridiculous, gas masks. We then roared down the runway and out over San Francisco Bay.

Although I had flown the Atlantic twice at night, I still had mixed feelings as we headed out into the inky blackness over the Pacific Ocean. Our first leg of the journey would be to Hawaii, the longest of the series of hops that we would make—2200 miles. Since then, flying has made great strides. Flying now, either by day or night, with navigation by radio beams seems very simple—but being out over the ocean with silenced radio, navigating entirely by stars or the sun, with an island for a destination, was something different.

The outline of the Golden Gate Bridge and the twinkling lights of San Francisco Bay soon faded away and we settled down for the long flight of over 14 hours. Not knowing what kind of weather we would encounter, I strapped myself in the seat before going to sleep. Because the gasoline had to be moved from one tank to another about each two-hour period to equalize the distribution and because the values and pipes were along high voltage wires, the portholes were left open to insure fresh air. During the night we moved into a sleet storm at high altitude. I slept through it, but it had worried the crew.

An uneven motion of the plane awakened me after daylight and looking out a porthole I saw that we were close to the water—too close for comfort—and that we had one dead motor. The plane was laboring and dipping on one side. A crew member told me we were going to try for an emergency landing at Bellows Field, a new airfield under construction on the eastern shore of Oahu. But in spite of our difficulties, we had to delay long enough to give identification signals so that our own antiaircraft artillery would not fire upon us. This signal consisted of making a small circle twice off a promontory of the island. The working men at Bellows Field leaned on their shovels in excited anticipation as we limped and wobbled on to the new runway and taxied by them. Then we learned, too, that we were out of gas, and took on enough to carry us over the mountains to our first destination, Hickam Field. There we landed at 11:15 a.m., completing the first leg of our journey in 14 hours and 35 minutes flying time.

I was met by an old friend, Brigadier General Henry Holmes, who had just been assigned to command the Services of Supply in the Hawaiian Theater of Operations. He escorted me to the quarters of the Commanding General of the Hawaiian Theater and Military Governor, Lieutenant General Delos Emmons, a pleasant, handsome and shrewd Air Force General whom I had known before. He was ill with influenza and turned me over to his staff for the necessary conferences on problems concerning the support of Hawaii and the use of Hawaii as a partial base to support the South Pacific. The entire afternoon was spent in going over shortages, levels of requirements and construction requirements. We had determined in Washington that time and money could be saved by shipping directly from the United States to the South and Southwest Pacific when possible, but we realized that there were times that Hawaii could be of great help in emergency shipments, particularly air shipments of spare parts for airplanes and weapons.

I also called at the office of Brigadier General Green (later Major General and Judge Advocate General of the Army), who had the problem of supplying the civilian population. I went over his problems of labor, materials, and supply levels. The Hawaiian Islands had never raised sufficient foodstuffs for its population, its principal crops being pineapples and sugar cane for export. It was becoming a problem to supply the islands in view of the ship tonnage we needed for military supplies. We were having trouble coordinating the military, naval and civilian tonnage requirements. Moreover, it was difficult to stop military personnel from purchasing from local merchants that which had been shipped in primarily for the civil population. I recommended that drastic action be taken to stop this and sent back to the Washington office requests for assistance to Hawaii in coordinating the requirements of the military and civilian populations.

Ancient and modern: Oxcarts in Burma shift loads to planes flying to China.

During my brief stay, I noticed that the Navy was building one or two buildings of permanent construction and it occurred to me that since the Army also had maintained garrisons and a headquarters on Oahu for many years, that the old wooden headquarters building might well be replaced by a permanent modern building. I sent a message to my chief, General Somervell, accordingly, but he slapped me down with a short terse reply that permanent construction during the emergency was prohibited by Act of Congress and to send no more recommendations for such construction. I thought of the fine concrete steel depot being constructed dockside at San Francisco and the cold storage plant at Pearl Harbor and wondered how the Navy did it—I still wonder.

General Delos Emmons accompanied me on a call on Admiral Nimitz, over-all commander of Central and South Pacific areas. Admiral Nimitz' headquarters reminded me of a large battleship conning tower and was run ship style. Admiral Nimitz, handsome, rugged, pink-cheeked, gray-haired, calm, looked every inch an admiral. He was very gracious to us and invited me to sit through his morning staff conference, after which we discussed my journey through his area.

I outlined to him the views of General Somervell and myself concerning some method of effecting closer joint operations in order to insure more economical use of shipping. He readily agreed that the idea should be explored, showing a particular interest in the establishment of new bases in the South Pacific. He asked me to be sure to see the "roads" which afforded shipping protection from weather at Espiritu Santo, and to take a look at the island for base purposes. This I agreed to do and advised him that I would call on him on my return trip.

While Admiral Nimitz was open-minded on our logistics suggestions, his staff officers were somewhat suspicious. Particularly were they concerned and rightfully so, about controlling their own tankers for fueling the fleet. I assured them that there was no intention of hamstringing the fleet but that petroleum, like all other supplies common to all services, would be needed by the Air, and Army Ground Forces; that we would have to work out a system of priorities and combined deliveries.

To my surprise, Admiral Calhoun, who was to join me in my flight south, had gone on ahead of me. I was to learn with some amusement later why he had done so.

The day before the departure South, Captain Eddie Rickenbacker arrived en route to Australia as a special emissary of the Secretary of War to General MacArthur. He was accompanied by his publicity man. That night, General Emmons had a small dinner for Rickenbacker, his party, Holmes and myself, but at the last minute the host regretfully gave up with the influenza and could not attend. Before midnight we

Moving up artillery ammo at Bougainville.

all moved out to the airport to take off. The airport was blacked out and quiet. After some difficulty, we found our planes. Eddie's plane started out to the runway for the first take-off, but finally taxied back with motor trouble. We offered to take him in our plane, but he wanted to go straight to Canton Island, whereas I had some checking to do at Christmas Island before going to Canton. He asked for another plane and flew away into the night. The next day I was to learn he was lost and down in the sea.

We sighted Christmas Island at 7:15 a.m. 21 October. It stood out like a painted picture in green in an ocean of blue. Oval in shape, the surf breaking on the white beaches, its coconut trees swaying in the breeze, it was a picture of peace instead of war. We were met by the commander and driven to his CP in the heart of the coconut grove where we washed, shaved and ate outdoors under the trees.

The troops were busy digging trenches and emplacing guns and barbed wire to defend our airstrip there. We found excess stores here and Holmes arranged to have the next ship remove them. Otherwise, we found no serious problems at Christmas Island and left at 11:15 a.m. for Canton Island, a more important air base that we were building up as a stopping point for flights south. We arrived at 4.15 p.m. to find that Eddie Rickenbacker, his party and crew had called for help early in the afternoon stating that they were lost, out of gasoline and about to take to life rafts. My crew searched for him all night, and while I checked on the logistic installations of Canton the next day they continued to search with no avail.

I could well understand how Rickenbacker had missed Canton Island. When my pilot tried to point it out to me it blended so perfectly into the sea, that I could not see it until we flew in toward it to land. The island is but a coral reef, standing a few feet above tide water. With no trees on it, except one or two at one end of the island, it is lost to the human eye on a slightly overcast day. On sunny days it is blistering hot, and the coral sheels and dust are blinding white. Since it is a British possession, a British resident agent lived alone there before our troops arrived. Just what the British could ever hope to get out of this bare roosting place for sea gulls was hard to understand, but it had certainly come in handy as a refueling base for our planes in their flights between Hawaii and the South Pacific.

The hospital and ammunition magazines at Canton had been placed partially underground, but the hard white coral made blasting and digging difficult. General Holmes and I agreed that levels of supplies at Canton were too high and arranged that shipments of surplus be made out to others places. Notes on shortages, particularly of spare parts for weapons, signal equipment and ordnance tools, were made and sent back to my Washington office and we prepared to move on south.

The men at Canton had worked hard in the blinding glare of coral and heat. The combat troops had to do the work of service troops as well as their own. I visited the hospital to find most of the men well but being treated for minor accidents incident to their work.

Since the next hop would be to Fiji, only about 1276 miles, and these were islands on which we could keep bearings, we decided to travel in daylight and continue our search for Rickenbacker. We flew low and crossed back and forth over the water areas south of Canton. I became convinced from that search that trying to find a life raft in the vast blue ocean was like hunting the proverbial needle in a haystack. At times we would spot an outline on the water that strongly resembled a raft, but on going down to examine it found it to be a cluster of seaweed or merely the shadow of a cloud on the blue water.

Several times we passed over small islands used as coconut plantations and circled them, but saw no signs of life. We gave up sadly but with some comfort and hope in the thought that several planes from Palmyra Island had been put on the search.

After seven hours of flight, we arrived off Fiji in a black thunderstorm, one of the flying hazards we had in those days. A considerable number of fliers and planes were lost in the early days in the South Pacific flying into "thunderheads" as the flying men called them.

Regardless of the storm, we had to fly in toward land on a specified route, making the proper circles and wing dips to identify ourselves as a friendly and not an enemy plane. Otherwise we might have been fired upon. On landing at Nandi Air Field, we were met by Brigadier General Upshur of the Air Forces, who invited us to his headquarters to await a lull in the rainstorm.

When it lifted, I took a local plane to Suva, flown by a New Zealander. It was a small windjammer that tossed around in the air like a chip, but we made it over mountains covered by black clouds to Suva, the capital of Fiji. Here I was met by Major General Beightler, who took me past his new ammunition magazines dug into the sides of the mountains and on to his headquarters in an old mid-Victorian house located on top of a high hill. The house in its day had been the best in its area. I inquired what happened to its owner and was told that he went broke and returned to a small island to raise coconuts.

Here I went over the levels of supply of the various critical categories and discussed the future with the commander and staff there. One of the Japanese fleets was on the loose at the time and it was not known whether they were headed for New Caledonia or Fiji. This fact caused me to study what would happen to the support of American forces at Guadalcanal if the New Caledonia base were captured or seriously damaged, it being the principal base supporting Guadalcanal. I came to the conclusion that we should have sufficient reserve stocks in Fiji to support the South Pacific until we knew definitely that New Caledonia would remain safe in our hands. That would mean duplication of stocks, but it meant flexibility of supply. The Japs could not undertake campaigns against both New Caledonia and Fiji simultaneously, and if they hit but one, we should and could have the other stocked to continue to support our operations. I sent my recommendations back to General Somervell who accepted them and acted promptly to start additional tonnage to Fiji. Fortunately, the Japs were later stopped by Admiral "Bull" Halsey's fine fighting fleet, and Guadalcanal became the last Jap attempt to push East.

On returning to Nandi Airport in the northwest area of the Island of Fiji, I found that we would have to remain overnight before proceeding onward to the south. That night we slept in a large, airy, cool, thatched hut. Several of these large thatched roof "bungalows" were under construction for the air force personnel of the station. It was interesting to watch the muscular brown-skinned Fiji Islanders erect these houses without nails, tying the cane rafters, beams and uprights by thongs and climbing quickly and gracefully using only their feet and hands.

Brigadier General Holmes left my party at Fiji and awaited a chance to return to his station at Hawaii, and since time was pressing, I pushed on to the Islands of Efate and Epiritu Santo. A patrol plane returned from the vicinity with the report that the islands were covered with heavy storms moving eastward toward Fiji. The air weathermen at Nandi said I might make it to New Caledonia if I flew at once and tried to skirt around east of the storm. This we decided to do. When we approached New Caledonia nearly four hours later and I wanted to land at Tontouta Air Base near Noumea, the entire tip of the island was covered by a storm. The base could not be seen. Not a single member of my crew had ever landed there, but they were willing to try it. After a few circles they had to open up their radio for short terse advice from the ground (something we were forbidden to do except in emergencies) and started down through the clouds. Now and then when the clouds cleared for a few seconds, we could see a boulder jutting just off the wings, but we made it and found it raining and muddy on the ground. Later, when the weather cleared and I saw the jagged mountains sitting in a crescent around the field, I wondered how my boys had done such a good job. Lieutenant General Harmon, Air Force, our commander in the south, felt the same way about it.

At the Tontouta Airport I noted a large number of Navy planes and inquired why these would be on an Army Air Force Base. The fliers replied with a grin, "Oh, they bring 'em ashore when they can for fear the carrier might be sunk." A good idea, I thought, but as some Air Force wag had said, "In this war the Navy has come ashore."

We arrived at the Army headquarters in a drizzling rain at 6:00 p.m. The South Pacific area was a joint command with the senior officer in the area, Admiral "Bull" Halsey, in command. Under him were the Fleet and Army commands. Since the Air Forces were then part of the Army, an Air Force officer, Lieutenant General Harmon, was in command of all Army and Air Force units in the area. Admiral Halsey made his headquarters aboard his flagship while Harmon was ensconced in an old-fashioned mid-Victorian style building in Noumea. Noumea was a typical French type colonial town with two-story frame buildings with outside stairways, reminding me of some of those on the side streets in the Old French Quarters of New Orleans.

At this headquarters I found Harmon in conference with his staff and worried. He had, of course, received the same report that I had heard in Fiji, i.e., that the Japanese fleet was moving eastward screening transports filled with troops. Whether they would strike Fiji or New Caledonia or Espiritu Santo was the question. But the fleet had a new Admiral—Halsey—who had just relieved Admiral Ghormley. Halsey wasted no time in the newly developed situation.

He tersely ordered his fleet to proceed to sea, find the Jap fleet and destroy it. His orders, delivered a few minutes before I arrived at Harmon's, had electrified the whole community as well as the military staffs. Within a matter of hours, the American fleet was to settle the question concerning the destination of the Jap fleet by badly defeating it.

Harmon's personal quarters were in a modern stone and stucco bungalow turned over to him by the French manager of the local nickel mines. I moved in with him temporarily. Living with him were Major General "Sandy" Patch, Commander of the Americal Division; his Chief of Staff, Brigadier General Edward Sebree; and Harmon's Chief of Staff, Brigadier General Nathan Twining, AF (now General). After outlining the purpose of my visit, Harmon arranged a conference of the Army and Navy staff officers concerned for the following afternoon.

The following morning I spent with "Sandy" Patch, looking over the harbor facilities and discussing with him his motor maintenance and warehousing problems in Noumea, and with General Breene the organization of the New Caledonia Base Command. It was obvious that changes should be made in the Engineer and Ordnance setup and that additional Quartermaster truck battalions, service battalions and port troops were needed in order to clear the vicinity of the harbor.

After lunch at Harmon's quarters we assembled in his office with members of the fleet afloat and ashore, as well as some of General Harmon's staff. Captain Carter, the senior Naval officer ashore, and Captain Miller, commanding the Navy Advance Supply Base, as well as Captain Bowman, the Fleet Supply Officer, were present. I was very happy to see a representative of the Navy Operations office in Washington, Captain Doughty. I explained to these officers the critical shortages of shipping facing us in our world-wide operations, the effect of the submarine warfare on our Atlantic operations, and the dire necessity of utilizing all available shipping efficiently, in order to increase the number of troops overseas and to maintain them. The advantages of the Army and Navy working closely together to eliminate duplication and overlapping in their operations were explained; and, in addition, I explained the Army's overseas supply system whereby the Army presented its requisitions and priorities to the Port of San Francisco for the supply of the South and Southwest Pacific. I next outlined an observation I had made in the morning check of the port, indicating that there were too many ships in the harbor of Noumea due to lack of port facilities for unloading these troops and storing or distributing the cargoes. A considerable number of ships had been unloaded in a confused scramble to obtain from the cargoes high priority items for the support of combat operations on the sea, in the air, and at Guadalcanal. All agreed that this was a very uneconomical operation. The Navy's solution was to have additional piers constructed to permit the additional ships to be unloaded. At the time of my visit there were only five berths at the docks. The Army Engineers agreed to construct two additional berths, but saw no chance of constructing more in the near future. As it required one week to unload one cargo vessel, it would take two or three months to unload the ships that were in the harbor.

As a solution, I proposed that the Army and Navy form a joint board or committee ashore to work together and to prepare a combined single list of the items needed by both in order of priority for shipment; and that on my return to San Francisco, I would arrange there to have the Army and Navy coordinate in filling these requisitions for shipment. Moreover, I suggested that ships should not be routed into the South Pacific at a faster rate than they could be unloaded, I was sure all of these matters could be straightened out if the two staffs would work together. I hopefully pointed out that items needed by the Army and Navy could be procured and supplied by one service and that service troops, particularly those involved in construction activities, could perform construction and other services for both the Army and Navy, thereby reducing the numbers involved in these activities.

Tentatively, they agreed and Captain Doughty from the Washington office agreed to a unified port command, with the port staff consisting of Army and Navy representation. In fact, Captain Doughty accepted all recommendations except the one concerning common construction and procurement of common items in the United States.

The question of refrigerator ship tonnage was discussed, since the Army had

Natural camouflage for a South Pacific Ammo Depot.

Ship to shore shuttle in New Guinea.

been complaining that they were unable to get fresh vegetables and meats due to the fact that the Navy had all the refrigerator ships. The Navy agreed to share some of its refrigerator ship tonnage with the Army, but the problem here was to arrange refrigerator storage ashore for the ground troops.

I then prepared to fly to Australia to see General MacArthur, and left word with General Harmon and Admiral Halsey's staff that I would return for further discussions after the trip to Australia. It had been raining for three days, with heavy rains and low ceiling. There had been no planes between Australia and New Caledonia for five weeks, and no one knew what the flying conditions would be. But we pushed off for Brisbane at 8:22 a.m. on the morning of October 27, 1942. The entire trip was made in the rain, and as we approached the shore line of Australia, it was easy to see that were headed into a heavy thunderstorm. We made contact with Amberly Field and had sufficient visibility to make a landing at 4:30 p.m.

I decided to drive directly to General MacArthur's headquarters before cleaning up or changing clothes. The rain was coming down in torrents and I was soaking wet. I arrived at General MacArthur's headquarters at approximately 5:00 p.m. and was ushered into his office immediately by General Sutherland, his Chief of Staff.

I had known General MacArthur for some 13 years and was very glad to renew our acquaintance. One of my old commanders, Major General Robert E. Callan, had been General MacArthur's mathematics teacher at West Point, and we had met at General Callan's several times before. As usual, General MacArthur was very gracious. Immediately leaving his desk, he came forward to greet me, and we sat down together on a divan to discuss the general situation. I outlined to him quickly the purpose of my visit over in the South Pacific area, the shipping situation, and the purpose of my visit to Australia. On conclusion of my briefing, he immediately arose and started pacing the floor, which is one his habits when he starts thinking and talking. It was easy to see that he was quite worried about the strategic situation in the Pacific, but also that, in the back of his mind, he was thinking continuously of the general situation world-wide, because he would pause in his comments to ask me questions concerning the Washington plans for European operations. To me he seemed still somewhat shaken by his bitter experiences in the Philippines. He outlined rapidly his fears that the Japanese could and would take the eastern shore of Australia, thereby preventing the American forces from using the Australian cities for bases and procurement centers.

It was his opinion that, if the Japanese captured Brisbane, Sydney, and Melbourne, they would obviously have a great advantage for the operation of their Navy. These cities would give them bases for naval operations and also huge resources, supplies, and equipment to help bolster the Pacific operations of the Japanese fleet and army. General MacArthur outlined his pitifully small force and urged that I press upon the War Department his strategic concept of the future. I told General MacArthur that I would not pose as a strategist, particularly in comparison with him, but that I could not feel so pessimistic about the capabilities of the Japanese.

I pointed out that there were 2,000 dead Japs on the barbed wire in Guadalcanal, where the Americans at that time had lost only 200 men; that our soldiers were averaging 10 dead Japanese for each dead American soldier; and that the same percentage could almost be applied to air casualties in the Japanese air force; that the Japanese method of fighting in Guadalcanal, both in the air and on the land, had been dumb. I pointed out in the first place that it seemed senseless to me for the Japanese to settle down and slug it out on Guadalcanal; that it would have been far better for them if they had made a bold stroke beyond at Espiritu Santo which would have given them a good naval and land base and prevented our occupancy of that base; that in my opinion the island-to-island slugging match would be expensive to the Japanese; also that when and if we ever took the offensive we should not engage in such piecemeal attacks but should boldly go around the Japanese bases; that I felt that if we could look behind their far flung forces we would find an almost hollow shell. I explained how difficult we were finding it in the United States—a great country with huge production potential—to keep our logistical operations working smoothly throughout the world; that I was sure the Japanese must be having just as much, is fact more difficulty, along the same lines.

In discussing the command logistical organization in the Pacific, General MacArthur stated that he believed that one theater of operations should be established with separate army and navy commanders. In such an organization he said we should return to the concepts that we were always taught in our staff schools; i.e., that in joint operations the navy supported the army in landing operations, that the navy should command on the water and the army definitely command on the land, that the navy control in a joint amphibious operation should end at the shore line.

Also, during these conversations, General MacArthur expressed his belief that the Japanese should be defeated first before we engaged in major European operations to defeat Germany. When I informed him that General Eisenhower would be the European Commander, he shook his head slowly and made a few remarks that I shall not record. I have no doubt that General MacArthur had probably received this word through official channels and also no doubt that the strategy of the war had been explained to him by secret messages from Washington. However, we engaged in polite conversation on the subject. I explained as tactfully as I could that the Joint and Combined Chiefs of Staff had concurred on giving first priority to the European Theater and that therefore only sufficient troops and supplies would be sent to the Pacific to enable General MacArthur to prevent further advance of the Japanese until Germany had been disposed of.

*Your change of address is vital to us. . . . We **want** you to receive your Journal!!*

General Lutes will conclude his series of articles in the September-October issue with the continuance of his flight to the South Pacific.—Ed.

Antiaircraft Association ROTC Medal Award Winners

The Citadel

Cadet Brevard B. Kendall, Jr., receives medal.

University of Cincinnati

Col. John M. Welch awards medal to William R. Cowell.

Harold Eugene Adams	Hampton Institute
David Andrew Berry	University of New Hampshire
James A. Carbonetti	University of Delaware
John L. Chapman	University of Minnesota
Edward T. Coleman	University of Alabama
William Raymond Cowell	University of Cincinnati
Stephen J. Dukkony	Texas Western College
Douglass E. Fell	Kansas State College
Eric W. Fonkalsrud	University of Washington
Jorge Gautier-Colon	University of Puerto Rico
H. Ronald Gilliland	Northwestern State College of Louisiana
Herbert Francis Hardy, Jr.	University of Maine
Sam H. Harper, Jr.	A & M College of Texas
Joseph Hrecz	Youngstown College
Frank J. Kane	University of San Francisco
Brevard D. Kendall, Jr.	The Citadel
George V. Kmiotek	University of Illinois
William J. Lawrence	University of California
Pierce M. Moore	Michigan State College
Richard Dixon Neal	Georgia Institute of Technology
Edwin M. Osborne	Washington University
Alexander Fairly Ransay, Jr.	Mississippi State College
John H. Reeve	Utah State Agricultural College
Eugene Patrick Souther	Fordham University
George T. Swisher	Virginia Polytechnic Institute
James Emanuel Wyatt	Florida A & M College

Unification Disappointing, Short in Unity, Savings

By BRIG. GEN. THOMAS R. PHILLIPS, U.S.A. (Retired)

Military Analyst of the St. Louis Post-Dispatch

THERE is widespread feeling in Congress that unification of the Armed Forces is not accomplishing what was expected of it, either in unity or in savings through elimination of duplicate or overlapping facilities.

A subcommittee of the Committee on Executive Expenditures in the Executive Departments, under the chairmanship of Representative Herbert C. Bonner (Dem.) of North Carolina, made an extensive survey of the overseas supply operation of the Armed Forces and found that, far from eliminating duplication and overlapping, the Air Force was busy setting up its own supply system to provide common-use items which had been supplied to it by the Army.

The committee came to the conclusion that "five years of disappointing experience under so-called unification legislation are strongly persuasive that the Secretary of Defense needs a stronger and clearer mandate for military unification."

Symington's Proposal

W. Stuart Symington, whose experience as Secretary of the Air Force and as chairman of the National Security Resources qualifies him as well as anyone in the country to pass judgment, believes that it would be a great organizational improvement to create a chief of staff to the Joint Chiefs of Staff.

He pointed out, in his March 31, 1951, report as chairman of the National Security Resources Board, that the chairman of the Joint Chiefs of Staff has no authority and no vote. "Accordingly, the number one military man in the Government is left with no statutory power of decision whatever."

"This is the reverse of standard American business practice," he continued, "namely, to give authority to the best man available in order that he can direct agreed policy. If it had not been for the great personal prestige of Gen. Omar N. Bradley, the problem resulting from this lack of co-ordinated direction would have become far more serious."

"It is a structural error in organization which can only grow in seriousness as it continues to function—one which will cost the country needless billions of dollars."

There is an important and fundamental difference between the recommendation of the Bonner committee and that of Symington. The Bonner committee would increase the authority of the Secretary of Defense, while Symington would increase the authority of the number one military man. The philosophy behind this difference will be discussed further on.

Two Opposite Theories

In the long discussions and investigations which preceded the unification act —the National Security Act of 1947— two opposed philosophies developed, one which would have established a national defense chief of staff and general staff, as well as a Secretary of Defense, and the other which attempted to provide co-ordination through a Secretary of Defense and a joint chiefs of staff assisted by a small staff. The first plan would have provided centralized authority over the three armed services. The second plan left the three services practically independent. The Joint Chiefs had no authority over them when wearing the Joint Chiefs hat and could only make recommendations to the Secretary of Defense.

The objections to the first plan were of two types. Some feared giving so much authority to the top military man might bring forth a man on horseback and hinder civilian control of the military. The other type of objection came principally from naval protagonists who feared that any form of centralized control might fail to regard the peculiar problems of the Navy and, through lack of understanding, make it impossible for the Navy to perform its missions.

The Navy had good historical examples for these fears. If Corp. Hitler, with only an army background and with an army supreme commander, had given the German navy adequate support in building submarines, it is not unlikely that Great Britian would have been starved out. In the Soviet Union, where the army had over-all control, the air was as completely subordinated to the army as the artillery.

Going to sea is a way of life. The Navy, for centuries forced to act for long periods completely out of touch with higher authority, was accustomed to independence of action. Consequently, its reasons for dislike of unification were deeply ingrained in its tradition as well as being based on fear of emasculation by a centralized authority without understanding of its functions.

Conflicting Opinions

The conflicting opinions resulted in an act which attempted to provide for co-ordination, but which gave neither the Joint Chiefs of Staff, nor the Secretary of Defense, sufficient authority to insure that the purpose of the act would be carried out.

The basic policy laid down in the National Security Act was contradictory. It provided for the "integration (of the Armed Forces) into an efficient team of land, naval and air forces" . . . but not to "merge them," "for operation under unified control." The three military departments are "separately administered" by their secretaries under the "direction, authority and control" of the Secretary of Defense, who was given rather weak authority to end "duplication and overlapping" in procurement, supply, transportation, storage, health and research.

A chairman for the Joint Chiefs of Staff, without vote or command authority over the three services, was provided in 1949 by amendment to the act. The original Joint Staff was limited to 100 members and later increased to 210. A national defense Chief of Staff or general staff was expressly forbidden.

This halfhearted measure has not functioned too well. Unified commands have been established all over the world where our forces serve, but for some

strange reason none has been established for the defense of the United States. The Bonner committee noted that "to the extent that unified commands have been established in several theaters of operation, there has been lacking the equivalent unification in logistical support."

Joint Staff Procedure

The Joint Staff is organized into groups dealing with strategic plans, logistic plans and intelligence. Problems are referred to the Joint Staff by any of the three services. The staff group comes up with a study and recommendations. This is referred to a committee composed of senior members of the three services so that each department can give its "slant" to the proposal. If it is complicated it is referred to an *ad hoc* committee for further study. When this process has been gone through, and it is lengthy, and each service has presented its objections, the study goes to the Joint Chiefs of Staff.

Here is another anomaly. The Joint Chiefs, except for the chairman, are each the chief of his own service. He has approved his service's "slant" as chief of staff of the service. Then he puts on his other hat as a member of the Joint Chiefs of Staff and is supposed to reach an objective finding as a member of the Joint Chiefs.

It is hardly credible that the system works at all. That it does is due principally to patience, fairness and integrity of the chairman, Gen. Bradley. We may not always be so fortunate in the chairman.

The other development arising from the National Security Act is a mushroom growth of the office of the Secretary of Defense. Including the Joint Staff, the Munitions Board and the Research and Development Board, the Secretary's office has more than 2300 civilian personnel and more than 700 military.

Civilian Staff Growth

Since the military heads acting as a joint agency are held impotent by law, it has been necessary to build up a staff under the Secretary of Defense. So what has in fact resulted is the development of a national defense staff of bright young civilians who are trying, not very successfully, to carry out military functions which require years of training and background to perform effectively.

It is apparent that such a system can never function effectively. The military functions now being performed in the Secretary's office should be performed under the military. But this would require strengthening the chairman of the Joint Chiefs of Staff, as Symington recommended, and the development of a military national defense staff. This will have to come about by evolution.

Gen. Bradley will not recommend it although he believes in it. He has heard too much about civilian control and power hungry militarists. But he told the House Armed Services Committee when amendments to the National Security Act were under consideration in 1949: "With reference to this arriving eventually at a Chief of Staff, I have said at various times that I believe you will demand a single Chief of Staff some day. It may be 20 years from now. But it will come—not necessarily from the military but from you people who are interested in economy and efficiency. I think it will never come until you do want it."

The report of the Bonner committee indicates that they are beginning to want it.

WAR CLOUDS

By BRIG. GEN. THOMAS R. PHILLIPS, U.S.A. (Retired)

Military Analyst of the St. Louis Post-Dispatch

THE danger of war is still very real. We have passed through some grave periods since the Berlin blockade, but even graver risks must be faced in the next two or three years. Such is the opinion of responsible civil and military officials in the State and Defense departments.

Two years ago, or even one year past, Soviet forces could have marched to the Atlantic and the western powers would have been unable to stop them. If this was the case why didn't the Russians march?

The answers can only be speculative. The satellite states were and still are of uncertain loyalty and their rearmament has not been completed. War would have given them a chance to revolt.

Weight of the Atomic Bomb

The threat of our retaliation by atomic bomb may have provided a measure of restraint, although some of our best informed Russian experts do not believe that this was a major factor. They believe that if the die were cast for war, the Kremlin would consider it a good bargain to gain Western Europe at the cost of considerable atomic destruction.

Of more influence, the experts consider, was the Soviet belief that the West would fall to them in any event by revolution or depression. The big Communist parties in France and Italy were awaiting the capitalist failure which would allow them to take over.

We were very close to general war over the Berlin blockade and over the Communist aggression in Korea. Since the Russians backed down in each of these cases, it is a reasonable assumption that they did not consider either occasion of sufficient moment to warrant the frightful risks of war. They were not willing or ready to engage in war deliberately.

Peril of Miscalculation

But war could have broken out through miscalculation. The Berlin blockade was based on the miscalculation that we would allow ourselves to be

driven out of Berlin. The aggression in Korea was based on the miscalculation that we would not fight to preserve the Republic of Korea.

Fresh application of Soviet pressure tactics can bring more miscalculation. Western response can lead to additional Soviet moves, which we will counter in return. War can generate itself with the inevitability of tragedy once the train of events has started.

The most critical matters now facing us, more serious than the pitfalls that have been avoided, are the entry of Germany into the Western coalition and German rearmament.

Germany alone almost defeated Western Europe and the Soviet Union at the same time. The Kremlin can only look upon German rearmament and German alliance with the West as a major threat which will not only stop further Communist expansion in the West, but which ultimately will endanger the conquests in Eastern Europe and the very existence of the Soviet state.

Issue May Be Crucial One

German rearmament has been considered by many Russian experts as the one matter to prevent which the Kremlin would deliberately go to war.

The stirrings of Soviet moves to prevent the German alliance with the West are already in evidence. The attack on the French air liner in its corridor on the way to Berlin is one sign of warning; interference with American highway patrols on the Berlin-Helmstadt road is another.

How seriously the Russians regard the German alliance with the West can be deduced from their offer last March of a united, rearmed and neutralized Germany. They are less fearful of a rearmed Germany than they are of a divided Germany allied to the West. This change in policy is considered by many to be as important a step in Soviet foreign policy as the decision in August, 1939, to align the nation with Hitler's Germany.

It is not unlikely that Berlin again will become the critical point. The Russians are much better prepared to blockade Berlin than they were on the first try. On that occasion the Allies were able to block East German rail and canal transport through Berlin. East Germany suffered severely from the counter-blockade. Today new rail lines and canals have been completed around the western sectors of Berlin and we shall not be able to impose a counter-blockade.

May Mean Fighting on Ground

If there is a new blockade, there is no reason to believe the pattern will be the same. To break it, we may have to fight our way through on the ground and in the air. Will this lead to war? Eastern Germany is better organized now for the Communists and probably will contribute to the campaign of harassment. Will this cause an East-West German war in Berlin? And if so, then what?

Every divided state—Germany, Austria and Korea—is a potential cause of war. They have been kept divided with supreme effrontery by the Soviet Union, in violation of all agreements, purely to further Russian imperialism. There is always danger of war while these states remain divided.

Gen. Omar N. Bradley, chairman of the Joint Chiefs of Staff, basing his opinion purely on military and not on political considerations, believes that 1954 will be the critical year.

He points out that by 1954 the Soviets may have an atomic capacity equal to ours today. Their stupendous stocks of ammunition and armaments will deteriorate or become obsolete by 1954 and 1955. A sizable part of the Soviet industrial capacity has been relocated in the Urals relatively safe from our bombing attacks. Modernization of the Soviet air force and of the satellite armies will have been completed by 1954.

Merely Short-Term Crisis

These are all short-term considerations. If we get through this period of grave risks, if we continue to gain in strength, we still are faced with an indefinite period of resistance to Russian expansion. Trotsky, asked once whether it was to be peace or war, replied, "Neither peace nor war."

The "cold war" is a Soviet tactic of pressure. We have to learn to live with it, but not to disregard it. It is hard for us. Already the House of Representatives, by cuts in spending authority of the Defense Department, is starting demobilization before our partial mobilization is complete, just as we are approaching the period of maximum danger.

The time of "neither peace nor war" is a period of armed truce. War is not inevitable because nations are armed. Strength is our only hope, and weakness will get us nowhere. Germany and France faced each other under arms for 44 years from 1870 to 1914 with Germany gradually becoming much the stronger power. The arms were a deterrent to war and not a cause.

Practical Aspect of War

Marxist ideology does not consider war evil. War is one of many methods to gain Communist ends. In Communist double-talk, Soviet war is a just war, a war of liberation of the proletariat, a war for democracy. The only evil war, in the Soviet basis, is the one the capitalist-fascist beasts fight. Since the Soviets do not regard war as evil, it is approached practically. It should not be risked without the assurance—never sure—of winning. The benefits to be expected should be worth the cost.

Such is the approach of the adversary we face. Without willing it, the United States has been forced to take the leadership of the free world which is resisting the Soviet drive for world domination. We could repond by accepting the struggle as one for world domination by us, but instead we are trying to build a strong Europe which by itself can become an effective counterpoise to Soviet power.

Europe was ravaged by religious wars between 1419 and 1648. Neither Catholic nor Protestant spiritual ideology thought it could live in the same world with the other faith. Today the conflict between material ideologies is just as deadly, but it need not last for two hundred years. Here in the United States we have the capacity to make the free world so strong that the practical Marxists will not choose to fight.

Never before has the decision of world peace or world war rested so fully in the hands of one nation. War can be avoided, if we are not already too late, if we become strong and remain strong.

Soldier's guide to GUIDED MISSILES **1**

The Aerodynamics of Guided Missiles

Captain Patrick W. Powers

WHAT MAKES THEM FLY?

This is the first of three articles on the basic principles of guided missiles. The second will cover the propulsion of missiles and the third guidance.

IT has been officially announced that the Army is already producing two kinds of guided missiles and is now organizing units to use them. Lieutenant General Thomas B. Larkin says that within five years Army use of guided missiles will probably be SOP.

For quite a while to come, the number of soldiers, officer or enlisted, who will have much to do with guided missiles will probably be limited. But guided missiles will be just as much an Army weapon as 60mm mortars or 155mm rifles. So every soldier ought to know something about them. The main facts we need to know about them are how they fly, how they are propelled, and how they are guided.

Guided missiles are highly technical; no question about that. But they can be described without using too many difficult technical terms. That is what I am going to try to do in this series. Not much can be said about any specific missiles because those facts are well classified, as they should be. But if we examine the general principles of operation we can get a good idea of what guided missiles can do, and what they can't. And that should tear away some of the mystery that now enshrouds them.

In theory, the flight and control of air-

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Reprinted from the *Combat Forces Journal* June 1952 issue.

craft and guided missiles are identical. But the design and the flight techniques of the two are very different. In this first article we shall see how and why missiles fly.

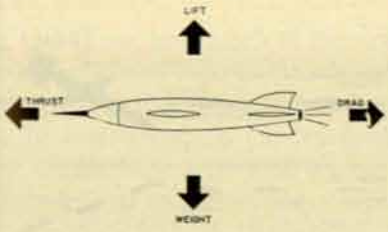


Figure 1. *Components of Flight*

Theory of Flight

WHEN any missile flies through the air—a stone, a golf ball, a plane or a guided missile—the airflow around it exerts certain forces upon it. Around different parts of the missile the air is traveling at different velocities. Hence the pressures on these different parts are not the same. These differences of pressure tend to force the missile up or down, backwards or forwards.

Figure 1 names the result of these pressure forces as lift and drag. It also shows the forward force or "thrust" caused by the missile's jet engine and the down force caused by its weight.

A familiar theorem of physics (Bernoulli's) tells us: pressure decreases when velocity increases. If we want the missile to fly, we must have a pressure, a force, up. Figure 2 shows how, by making the top of the wing surface sharply curved, the air travels faster there than on the bottom of the wing. Thus, there is more pressure force in the up direction than down.

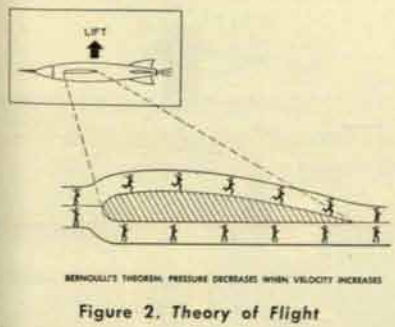


Figure 2. *Theory of Flight*

In high speed flight, the speed of sound is another important matter. Let's see, first, what happens when the still surface of water is disturbed. If you drop a pebble into a pool of water, a circular wave moves out from the splash. This wave front moves at a certain speed until it reaches all sides of the pool. If a ship steamed across the pond at certain speeds, we would see a wave move out from the bow and we would notice that the ship never actually caught up with it. The distance between the bow and the wave would depend on the speed of the ship. This wave couldn't possibly get out ahead of the ship unless it moved out from the ship at a faster velocity than the ship was traveling.

But if the ship increased its speed enough, it *would* catch up with the wave, and the wave would stay right on the bow and never have a chance to move out.

The same thing occurs when an object disturbs the air. When you snap your fingers together, a sound wave moves out through the air and in a closed room everybody would hear the sound. This sound wave moves fast, very much faster than the water wave.

It has been found that a sound wave is the smallest disturbance that can exist in the air, and so we naturally compare all other disturbances to it. From this we get the terms "subsonic" (less than the speed of sound in air), "sonic" (equal to the speed of sound), "transsonic" (from just below to just above the speed of sound) and "supersonic" (greater than the speed of sound). Now an object flying through the air makes a large disturbance in it. A guided missile sets up waves in the atmosphere something like the water wave on the bow of the ship. When the missile is subsonic the "bow" wave moves way out in front of the missile, and is actually a series of weak pressure waves. As the missile goes faster and nears the speed of sound, these weak pressure waves begin to pile up just in front of the "nose" and they get stronger. Right after the speed of sound is reached, a very definite but very thin pressure wave forms around the point of the nose much like half of a giant soap bubble. As the missile moves still faster, the pressure wave attaches itself to the nose and bends back, streamlining away from the direction of flight. This pressure wave is called a "shock" wave because there are sudden, large changes in the properties of the air flowing across it, even though this wave may only be one ten-thousandth of an inch thick!

These sudden, large changes are in the velocity, pressures, temperature, and density of the air. These differences depend upon the "Mach number" and the shape of the missile.

The Mach number is simply a comparison of the velocity of the missile to the speed of sound in the air. A missile traveling at less than the speed of sound always has a Mach number less than one. At the same speed as sound, the Mach number is one; at faster than sound it is larger than one. The German

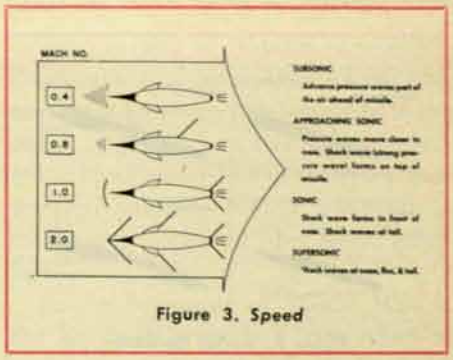


Figure 3. *Speed*

V-2 rocket traveled at a peak Mach number of five, which in miles per hour was close to 3,750!

Thus, when a missile moves at the speed of sound and faster, shock waves form in front of it, and, in addition, on some of the steering surfaces where the airflow has a high velocity. And these waves create large pressure changes which often adversely affect the performance of the missile.

The occurrence of shock waves on a missile as it nears the speed of sound has led to the description "breaking through the sonic barrier" or "cracking the sonic wall." Actually there is no such barrier. There is only the greater difficulty in steering and in keeping stability of flight at the transsonic speeds. Besides, the missile never really "breaks through," because the shock waves always remain with the missile in supersonic flight. They never fall behind it.

The exact effects at transsonic speeds are still largely unsolved; we are not certain what happens.

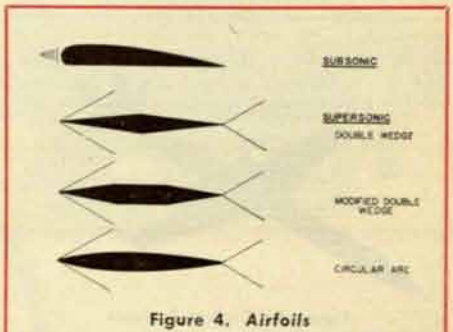


Figure 4. *Airfoils*

Figure 3 shows how the pressure and shock waves first form on top of the missile at "approaching sonic speeds." This shock wave causes difficulty in steering, for it creates unpredictable forces on the control surfaces which are often ren-

dered useless, at least for the moment. That is the reason for getting the missile on through the transsonic speeds in a hurry. If we don't we might lose control of it entirely, or the control surfaces may get damaged. At the higher (the supersonic) speeds, the shock waves behave in a regular manner, more favorable for control and stability.

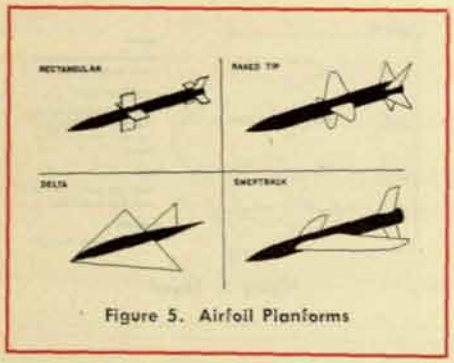


Figure 5. Airfoil Planforms

When missiles travel at supersonic speeds, there is a tremendous rise in temperature on the outside of the missile. A moving missile has a stagnant layer of air all around it known as a boundary layer, air that sticks to the missile because of viscosity. This layer of dead air gets so extremely hot that it may melt the "skin" or surface of the missile if the missile gets moving fast enough! This is why a meteorite entering the atmosphere will melt. Its boundary layer of air reaches temperatures of thousands of degrees. For a missile traveling at twice the speed of sound (at a Mach number of two) the outside skin temperature is about 475 degrees Fahrenheit—hot enough to melt lead.

Missile Configurations

THE shape of the wings and tail surfaces of each missile is different, although a general pattern is usually followed. Figure 4 shows the different types of airfoils or profile views of typical wing and tail sections. Notice that the supersonic airfoils have sharp leading (front) edges whereas the subsonic one has a blunt leading edge. This difference is necessary because of the shock waves that always occur in supersonic flight.

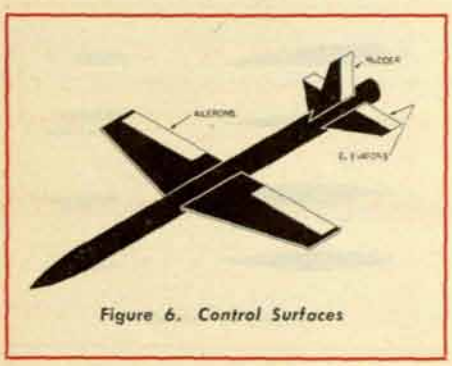


Figure 6. Control Surfaces

Top views of airfoils or airfoil planforms are shown in figure 5. The swept-back wing on one of the missiles shown enables it to get up closer to the speed of sound without any shock wave occurring than it could with a straight wing. Many of our present high-performance aircraft have that wing shape for the same reason.

Control Surfaces

The basic control surfaces are pictured in figure 6. They look much like those of a conventional aircraft. They give the missile its flight "attitudes" (figure 7). These are called pitch or elevator control, yaw or rudder control, and roll or aileron control. Many combinations of these basic control surfaces are used for present-day missiles.

A movement of one of these surfaces causes a pressure difference to exist on its surface and exert a lift force to steer the missile. Figure 8 shows how a downward deflection will cause the air to flow faster over the top with a decreased pressure. The higher pressure on the bottom gives a force in the up direction, and the combination of the two pressure forces is, of course, lift. If lift is exerted on the tail, the missile will be tipped nose down and start diving. If the left aileron is turned up and the right one down, an unbalanced lift is created which makes the missile roll.

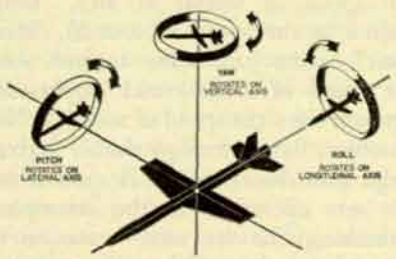


Figure 7. Flight Attitude

Different arrangements of the steering controls have been used. The German V-2 rocket-propelled missile had the shape shown in figure 9, with all its steering and lift surfaces to the rear. The forward or "Canard" type of controls are also used extensively on some of the present missiles.

FOR proper control of flight, stability is also important. Just as a ship must be properly balanced to navigate, so must a missile have the proper distribution of aerodynamic forces and weight to undertake any type of maneuvers in the air. The problem is much more critical with a missile since it travels at such tremendous speeds—two miles in five seconds, sometimes. During this very short time it may have to make steep turns, and this puts enormous stresses on the structure. The main point here is that the center of gravity of the missile must always be ahead of the center of pressure (the center of the total lift force) as shown in figure 9.

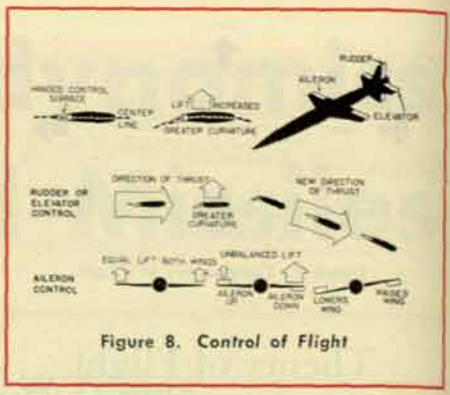


Figure 8. Control of Flight

THIS, in brief, is how and why guided missiles fly. When a guided missile is called upon to perform violent maneuvers the control surfaces must take hold in a fraction of a second and slew the "bird" around to head it toward the target. Pressure forces are created to exert a lift that turns the missile. The surfaces on which these forces act are like those of conventional aircraft with certain modifications. The biggest problem of aerodynamical control comes in the transsonic speed zone when shock waves first start to form. These cause tremendous forces to buffet the control surfaces, with lack of control and often damage to them. But in the supersonic speed zone, the shock waves behave in a regular pattern and we are able to design control surfaces that operate effectively.

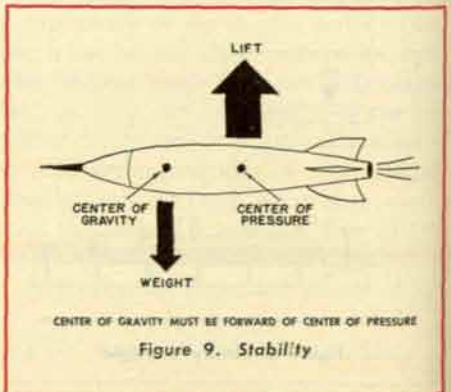


Figure 9. Stability

The next article in this series will cover guided-missile propulsion.

Indo-China: Outpost Of Anti-Communism

By LT. COL. JOHN B. B. TRUSSELL, JR.

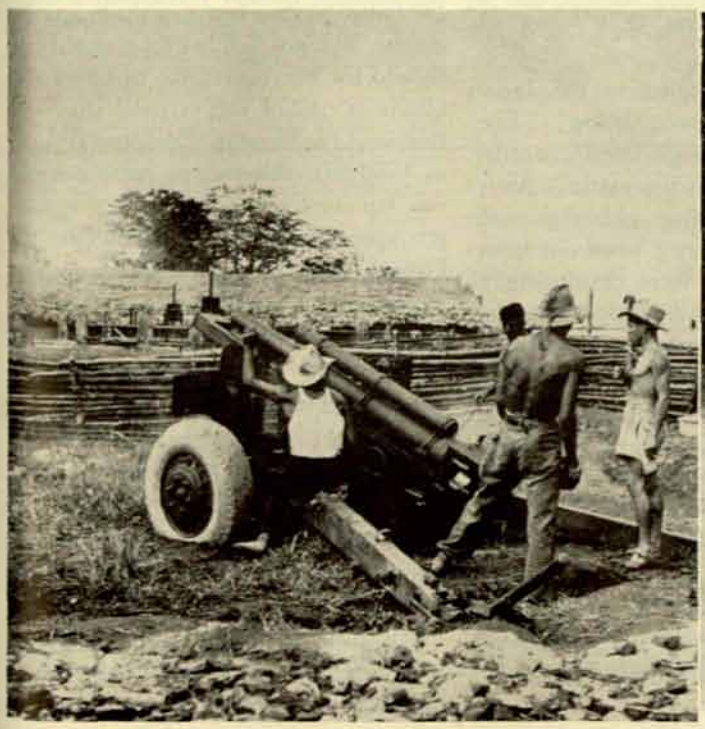
TODAY we hear much of the strategic importance of Indo-China. A significant part of that strategic importance can be summed up in one word—rice. One of the basic factors of strategy is economics and one of the major aspects of economics is food. As one of the great rice-producing areas of Asia, Indo-China's food surpluses in the past have been vital to India, to China, to Japan and the Philippines.

But Indo-China is a symbol, too. Like Korea, it is a symbol of the free world's determination to oppose aggression. It is one of today's major trouble spots, where other nations could easily become involved at any moment. Secretary Lovett was recently quoted as telling Congress that ". . . . The U. S. faces the possibility of getting into another war, Korea style, if the situation in Indo-China gets worse."

At the same time, Indo-China is far away. Why should America be concerned with what happens there? Consideration of the events which have been transpiring in that part of the world should suggest an answer to that question.

Indo-China is actually made up of three countries, Vietnam, Cambodia and Laos, which are independent and associated states within the French Union. Prior to World War II they were colonial possessions or protectorates of France, but after the establishment of the Fourth Republic an agreement in 1948 gave them a new status in an organizational pattern which was aimed toward becoming something comparable to the British Commonwealth of Nations. Immediate development of autonomous local governments, however, was hampered at the outset by the lack of sufficient numbers of qualified Indo-Chinese to serve as government officials. Almost immediately, too, it was hampered by internal rebellion.

At the beginning of World War II the Japanese Army had been quick to snatch the rich prize offered by Indo-China's lush valleys and river deltas. But the Japanese did more than drive the French temporarily out of the area; they sowed seeds from which has grown bitter fruit. With VJ-Day in sight, they gave arms and encouragement to dissident elements which wanted no restoration of French authority. Caught in the wave of nationalism which swept over the East, rebellious Indo-Chinese went underground in the interior, particularly in the northern part of the region. Under the leadership of Russian-trained Ho Chi Minh, they formed a rebel "government" (under the communist—directed Vietminh Party), and in 1946 began military operations. In 1950 this "government" was recognized by the Soviet



Artillery blasts Vietminh positions in Phuly area.

French troops use mine detectors to clear road.

A Vietminh prisoner taken by French Legionnaires.

and its satellites, including communist China.

Much as the French government might wish to stand the Associated States on their own governmental feet, the lack of local leaders and organization made this impossible; French abandonment of the Associated States would have guaranteed Vietminh victory. Painfully the French fought to hold off the rebels while building and equipping armies for the Associated States. Autonomy has been granted piecemeal, as rapidly as the situation permitted, although the process still cannot be said to be complete.

The circumstances enabled the rebels to distort the facts into a propaganda line which has not been without effect even among some informed people. Vietminh characterized the struggle as a fight against "Western imperialism," and for a time this misrepresentation was accepted in certain Western circles, in which there was talk of France's "colonial war" in Indo-China.

Actually, the truth is far different. Any imperialistic objectives in Indo-China are not French but communist. The French are fighting to establish governments which can fend for themselves against a faction which is attempting to extend communist domination. In this struggle, the French have made a tremendous military effort. Although published figures of the anti-communist military force in Indo-China vary, there appear to be between 160,000 and 185,000 troops of the French Union Army involved. Of these, some 55,000 are from Metropolitan France; the remainder are Foreign Legionnaires, Moroccans, Algerians and Senegalese. In addition the French Union Army includes 65,000 Indo-Chinese volunteers. These native forces, which outnumber the Metropolitan French numerically, have made and are making a valuable contribution to the anti-communist war. The naval and air forces, which increase the total by an estimated 28,000 men, are virtually all Frenchmen. In addition, the armies of the Associated States muster a total variously assessed at from 100,000 to 142,000. All told, the anti-Vietminh forces probably number at least 300,000 men, exclusive of auxiliaries.

Probaby no one knows how many rebels make up the Vietminh forces. Some reports have put their numbers at only 45,000 full-time troops, but others have claimed as many as 180,000. To a large extent, too, the Indo-Chinese communists make use of auxiliaries, irregulars whose missions are sabotage, terrorism and collection of intelligence. No assessment of the Vietminh capability can ignore the material aid being furnished by other Red governments. Although no Red Chinese soldiers have been identified in battle, up to 10,000 Chinese military and technical advisers are said to be operating with the Vietminh forces, and Vietminh personnel are reported to be receiving training in China.

Since its very beginning the Indo-Chinese war has been bloody. The mountainous and jungle terrain encourages the rebels' guerrilla tactics. After four years of meeting ambushes and snipers whenever they pushed out from Hanoi, the French were developing a mentality which was defensive, even defeatist. But in December, 1950 General De Lattre De Tassigny took command. "From now on, you will be led!" he promised his army, and proceeded to make good his word. Within a month his thrusts into the interior had swung the balance and the French, infused with a new offensive spirit, were consolidating their control over the entire Red River Delta, which is the main geographical prize for which both sides are fighting.

However, anti-guerrilla operations are almost always costly. French casualties since the war began are said to have exceeded U. S. losses in Korea. In officers alone, the French have lost the equivalent of three classes from St. Cyr. In terms of money, too, the price has been high: by November, 1951 the cost had already mounted above two billion dollars and present expenditures are at the estimated rate of a billion dollars a year.

Operations in such a war are difficult at best. The French objective, at least until the armies of the Associated States become capable of taking over an expanded share of the campaigning, is to hold the delta area which includes Hanoi and Haiphong. Making full use of their control of the air, the French base their tactics on bombing and strafing as well as artillery attacks against Vietminh strongpoints before the infantry moves in to the assault. Any village may constitute such a strongpoint and the villages are numerous. That kind of war is slow and tedious but the French efforts are producing results. There are recurrent reports of dwindling Vietminh forces, of a drop in rebel morale. True, the death of General De Lattre in January of this year was a blow to the anti-communist effort, but his successor, General Raoul Salan, is carrying on the fight with persistence and determination.

But why is the United States concerned in Indo-China? Why is military aid being supplied? Basically, the answer can be found in a statement General De Lattre made a few months before his death: "We are fighting on a world battlefield for liberty . . . for peace." Indo-China is one of the skirmish lines on that world battlefield. Recognizing early in 1950 that this was no mere colonial war but the fight of free nations against attempted communist domination, the United States began shipping military equipment to Indo-China. Most of this matériel has been going to arm the newly formed units of the Associated States, not to the French Army, and has played a significant role in the development of trained, qualified organizations. Up till last January, 100 shiploads of U. S. supplies had reached Indo-China, and during the past few months the rate of delivery has been increased, with the 150th shipload reported in late May.

American assistance need not be justified solely on grounds of aid to the opponents of aggression, however. The

war in Indo-China cannot be isolated from the worldwide situation. It possesses a significance for policy not only in the Far East but in Europe, not only for the French Union but for all the Free World. With a substantial percentage of her career soldiers tied down and a large proportion of her military budget committed in Southeast Asia, France cannot move as fast as would otherwise be possible toward the formation of divisions for service under SHAPE. Likewise, she has little more than a token force to spare for U. N. operations in Korea.

The Indo-Chinese war has already cost France more than the total amount of military aid which she has received from the United States for defense in Europe. If the Vietminh rebellion could be wiped up, undivided effort could be devoted to the development of greater strength in other areas of strategic significance. Solely for its part in hastening the attainment of this end, by helping the Associated States and the French to smash the rebellion, American military assistance can be justified.

Still another consideration for the United States is the probable effect of a communist-dominated Indo-China on the rest of Asia. Malaya would be further jeopardized; Thailand, Burma and Indonesia would be subjected to intense pressure to submit to the demands of the communists; India, completely flanked by Red-dominated areas, would find maintenance of her neutral position extremely difficult. And the effects would not be limited to the areas immediately adjoining Southeast Asia.

The impact of such a major communist victory on the fatalistic Oriental mind would add tremendous force to the communists' propaganda campaign. Moreover, there are economic implications. Industrialized countries would be deprived of vital sources of strategic materials. With regard to rice, much of Asia is a seller's market, with customers competing against each other. Japan, in particular, must import rice, and the price exacted by a communist Indo-China would almost certainly include political demands which could face Japan with the necessity of choosing between a pro-communist course and starvation. Whichever choice were made, United States policy aims would suffer.

The great unknown in the problem of Indo-China is the future behavior of Red China. There is a striking parallel between the present situation in Indo-China and the situation in Korea in the fall of 1950, before the U. N. advance to the Yalu River. The entire complexion of the war could be altered by Chinese action. There is an interconnection with the current situation in Korea, too: if there is no resumption of full-scale fighting in Korea it is possible that China may feel a necessity to lash out against Indo-China. The Chinese are old hands at the communist game of diverting attention from one irritation by introducing a counter-irritation. A "crusade" against the "imperialists" could be used to justify numerous domestic abuses.

There is no question but what China is fully capable of sweeping into Indo-China. Some accounts claim that there are 250,000 Red Chinese troops poised on the Chinese side of the border; and Red Chinese aircraft, including jet fighters, are based in South China in locations which would permit them to support an invasion.

But the sure knowledge that interference would bring prompt action by anti-communist nations appears to be holding back the Chinese Reds from outright participation in the war. There might have been some question in the communists' minds regarding what the West would do about aggression in Korea, but there can hardly be doubt of the consequences of full-scale Chinese aggression in Indo-China.

Britain's Foreign Secretary Eden, for one, made it clear several months ago that the U. N. would take action against any Red Chinese intervention in the Indo-Chinese war. How long this knowledge can deter Mao Tse-tung and his Chinese planners is anyone's guess, but without more intensive help from the communist bloc, the Vietminh forces can probably not overthrow the legitimate governments of the Associated States.

On the other hand, even assuming no Chinese intervention, it is unfortunately not possible to foresee a successful conclusion of the war in the immediate future. For some time to come, the conflict in Indo-China will probably continue to be a drain on the French military effort, a diversion from the task of developing a defense force in Europe.

Thanks to a widening understanding of the issues involved, however, there has been a stiffening of support of the anti-communist forces fighting against Vietminh. Also, the developing military power of the Associated States, abetted as it is by American help on an increasing scale, should in time permit the return of French Army units to France, to take their places in the ranks of the defenders of Europe. In these two factors and in their inherent prospects of continuing and expanding the suppression of rebel activities, there is hope that a clear-cut victory may eventually be won.

THE PORTOBEL MACHINE GUN TRAINER

By MAJOR THEODORE WYCKOFF and 1st LT. REUBEN J. RUTLEDGE

THE 34th AAA Brigade has this year adopted something new in the way of training antiaircraft machine gunners. Procured by Headquarters, European Command from the R. F. D. Company, Godalming, Surrey, England, the "Portobel" machine gun trainer has taken its place along with live firing among American AAA troops in Europe.

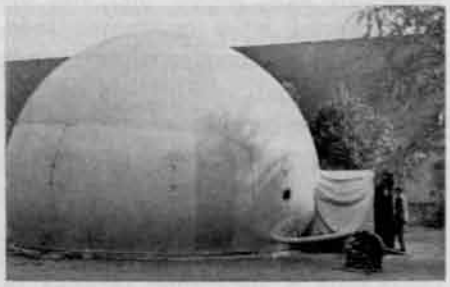
The Portobel is a portable training device which has been designed to provide M16 and M55 quadruple caliber .50 machine gunners with practice in tracking targets with speeds up to 500 miles per hour on any type of course. Although presently equipped only with an M45 quad fifty turret as used on our M16's and M55's, it may be adapted for use with M19 and towed 40mm type turrets.

Being portable, the equipment may be moved to wherever the greatest training need exists. In the 34th Brigade, the most efficient use of the Portobel has been obtained by allowing each battalion scheduled for range firing to have the use of it for at least two weeks preceding the battalion's time on the range.

Due to the nature of its construction, the equipment may be used under most weather conditions. This is of particular importance in Germany, where the number of fair flying days per year as well as the range time available to any one unit is strictly limited.

Description

The apparatus consists primarily of an airtight fabric dome 30′ in diameter and 20′ in height which in use is maintained in a fully inflated state by an airblower. The instruction of personnel under training is carried on inside the dome, the internal pressure of which is approximately one millibar greater than the external barometric pressure. The interior of the dome is illuminated to resemble the sky and is finished with a white rubber surface which provides a good screen. A 35mm projector, suitably modified, projects pictures of attacking aircraft onto a motorized mirror



The Portobel M.G. Trainer

which moves in azimuth and elevation while reflecting on the inner surface of the dome. Thus, the path and attitude of aircraft attacking as in real flight is simulated.

On the films is a yellow spot which becomes visible when the aircraft comes within range of the gun. This spot is projected in such a manner that it always represents future position and indicates the correct point of aim of the gun at the moment it is fired.

The targets shown on the screen are engaged by personnel manning an electronic machine gun in an M45 turret which, when fired, projects a cross of light onto the screen. If the gun has been aimed correctly, the reticle should coincide with the yellow spot on the film. This spot is normally not visible to the gunners as they wear spectacles which filter out the yellow color. The instructor is provided with a hit recording apparatus by means of which he automatically records the number of hits obtained by the gunner by pressing a button when the gun is correctly aimed. The number of rounds fired is automatically recorded and thus it is possible to compare the number of hits against the number of rounds fired for an accurate analysis of each shot.

Considerable care has been taken to reproduce in the apparatus the psychological effects of sound on the mind. The trainer reproduces the roar of the attacking aircraft engines as well as the whistle and explosion of bombs and gun fire. When the gun fires, the sound of the gun shot is duplicated. The sound track of some films incorporates the noise of guns from adjacent units. This, combined with the ability of the equipment to provide incoming courses (something which you don't normally get with towed sleeves or RCAT's) tends to lend to the Portobel a high degree of realism.

The authors report that the Portobel Machine Gun Trainer was procured for $13,000 and that the operating costs are nominal. That would make it far less expensive than similar purpose devices used in our training centers and armories.—Editor.

Training

Through experience it has been found that it is best first to orient prospective students with a lecture, or series of lectures, covering a description of the equipment, its capabilities and limitations (the M45 turret, the Cal. .50 machine gun and the Mark IX sight), the elementary principles of sighting, a brief description of the Portobel, its operation and training. This may be done with all the gunners in a battalion at the same time.

Following this orientation, a class of fifteen students is about the optimum number for actual training. The most effective procedure is to allow each student to fire a series of short courses to get the feel of the equipment and the proper sight picture. During this period, the instructor interrupts frequently to correct the gunner in the turret and to lecture the group as a whole. This can be accomplished in a four hour period. During the next four hour period the men can be allowed to fire longer series of courses with less interference by the instructor. On these series, the men can be scored and advised of their progress. With time allowances for climbing in and out of the turret, breaks, etc., this gives about a half hour of simulated firing per man. Poorer students can be returned for additional time.

Thus, the machine gun crews of an AW battalion can be trained in about two weeks. The machine gun sections of a Gun battalion can be trained in about one week.

SAAA, MANORBIER

By MAJOR M. R. McCARTHY

IN June, 1947, I got the word that I could get a detail to take an eighteen months course at SAAA, Manorbier. With some busy inquiring I discovered that this referred to the British School of Antiaircraft Artillery at Manorbier, Wales; hence the SAAA, Manorbier.

We really shouldn't remain quite so ignorant as I was. SAAA, Manorbier is the center for all AAA activity in Great Britain, and they have there many ideas and practices which we do well to learn about.

The School of Antiaircraft Defense was organized about 1934 at Biggin Hill and was manned jointly by the Royal Artillery (gunnery) and the Royal Engineers (searchlights). In 1939 the Royal Artillery took complete responsibility and at the same time the School was dispersed from Biggin Hill.

The Gunnery Wing was moved to Manorbier, Wales for its good firing range on the shore, and there it has remained. This wing has had seniority throughout and in varying degrees has exercised supervision and control over other wings.

Eventually the Wing was split to form the Heavy AAA Wing and the Light AAA Wing. In 1942 the School was officially centered at Manorbier with the Chief Instructor (CI) Gunnery, becoming CI of all instructional wings.

The Searchlight Wing, tied closely to RAF, moved successively to Shrivenham, Rhyl, Bude, Langham, and finally to Manorbier, where it is now combined in the LAA Wing.

The Radar Wing, stationed earlier at Felixestowe and Watchet, moved to Manorbier in 1944.

In 1947 SAAA found it necessary to add a Basic Science Wing.

Closely related to the School, but entirely independent, is the Trials Establishment, R. A., at Ty Croes. This agency performs like our Army Field Forces Board No. 4, and also carries out some work comparable to that at Aberdeen Proving Ground.

During World War II the British School of Antiaircraft Artillery trained over 32,000 students in 1400 courses. Among the students were Americans, Canadians, Australians, Indians, South Africans, Egyptians, Maltese, and a large representation from neighboring European countries. Over 2400 urgently needed Instructors in Gunnery (I's G), and Assistant Instructors in Gunnery (AI's G), were trained. Between 350 and 400 user and acceptance trials were completed. AAA personnel who had received their training at Manorbier fought in every theater in the war and exercised great influence on antiaircraft matters.

Organization

The present organization of SAAA is about the same as that indicated above. A brigadier commands both SAAA and Manorbier Post. The post functions only to support the school, and consequently, its operations are limited to supervising supply, transportation, mess and billets. The commandant has, of course, a staff to handle these post responsibilities. Generally speaking, their duties are divorced from the school itself; therefore, I shall discuss this aspect no further.

In the school, immediately subordinate to the commandant is the colonel, chief instructor, who is responsible to the commandant for the instruction given at SAAA. He has two principal assistants to help him with his routine tasks. The PA (personal assistant) functions in much the same manner as a combination aide-adjutant-secretary would in our service. At present, the PA is a captain. The IG, courses (instructor in gunnery, courses) advises the CI on matters pertaining to course schedules, instruction to be given, assignment of graduates, and use of equipment. This position seems to be one of considerable influence, and its occupant is much envied. The IG, courses, is a major.

The instructional wings, each headed by a lieutenant colonel, constitute the bulk of SAAA. At present, the school consists of the following wings:

- HAA Wing
- LAA/SL Wing
- Radar Wing
- Basic Science Wing

The instructional responsibilities of these various wings are clearly indicated by their names. A varying number of instructors may be assigned to any particular wing based on teaching requirements at the time. Due to their effective, comprehensive training, it is a simple matter for instructors to be transferred from one wing to another in order to balance the instructor load.

School Facilities

Physical Layout. For some time prior to its direct connection with SAAA, Manorbier had been a temporarily leased site and the location of the 3rd AA Practice Camp Headquarters. After the Gunnery Wing had moved from Biggin Hill to Manorbier in November, 1939, efforts were made to construct some semi-permanent type buildings. This project completed the present post during the period 1940 to 1942. With the exception of a few office buildings, the garrison theater, and the large matériel sheds, all buildings are small, single story, frame structures. In 1947, Manorbier achieved a permanent post status and, thus, it became possible to institute a permanent type construction program.

Firing Point. A good deal of instructional time at SAAA is spent in firing. The school possesses a well organized firing point for both heavy and light antiaircraft artillery practice. Fire control instruments are in semi-static locations. The static AAA guns are in concrete emplacements. Mobile heavy and light AAA weapons are emplaced in a special section to the flank of the static guns. The entire firing point is situated immediately adjacent to the classrooms on a flat-topped cliff about two hundred feet

Major M. R. McCarthy, a graduate of SAAA, Manorbier, now serves with the Western AA Command. He acknowledges his indebtedness to Lt. Col. John H. F. Mermagen, R.A., British Liaison Officer with A.F.F. Board No. 4, for his valuable help.

above the sea. Some occasionally nasty weather in winter and the presence of considerable coast-wise shipping in the Bristol Channel are the only features to detract from an extremely good antiaircraft firing point.

Instructor Staff. Especially noteworthy to US officers was the excellent use made of well qualified enlisted instructors on a wide variety of tasks. These assistant instructors in gunnery (AI's G) taught matériel classes, radar laboratory work, all drill on the firing point, maintenance, and some formal classroom instruction. These AI's G were, almost without exception, a great credit to SAAA and to the British Army.

Practice Camps. Although not strictly a part of SAAA, the AAA practice camp is, in effect, largely controlled by SAAA since the School assigns instructors to supervise firing at the camps. In England, there are three practice camps for AAA; they are located at Bude, Tonfanau, and Weybourne. Generally, units of the Territorial Army (US equivalent is the National Guard) conduct their annual practice during the summer months. Most resident courses at SAAA conform to a normal academic year. Therefore, SAAA has instructors available during the summer months for duty at the practice camps.

Courses of Instruction

Long Gunner Staff Course. This course is of eighteen months duration and is given to carefully selected officers for the purpose of training them as instructors in gunnery. For promotion purposes, attendance at this course may be considered in lieu of the Staff College course at Camberly. (US equivalent is the Command and General Staff College.) The big "G" denoting successful completion of the long gunnery staff course is much coveted by Royal Artillery Officers.

The course includes a rather complete coverage of basic electricity, radio and radar, military chemistry, review of mathematics, AAA gun and gun carriage design and development, design and development in the field of fire control instruments, and ballistics. In addition, instruction emphasizing the practical aspect is given in light antiaircraft artillery, heavy antiaircraft artillery, AA radar, and tactical employment.

The course also includes instruction given at the Artillery (Field) School at Larkhill, the Coast Artillery School at Plymouth, and the Naval School of Gunnery at Portsmouth. Also, several visits are made to both military and industrial centers for observation of the latest trends in military design and production methods. There is no corresponding course to a long gunnery staff course in US Army schools.

Short Gunnery Staff Course. This course includes roughly one-half of the instruction given in a long gunnery staff course. The exact material to be taught depends upon the needs of the officer concerned. Ordinarily, the curriculum breakdown is "radar–heavy antiaircraft artillery" or "searchlights–light antiaircraft artillery." Much of the very valuable preliminary instruction of a long gunnery staff course is eliminated. Completion of this course is indicated by the award of a "little G." It is not unusual for an officer to take one short gunnery staff course, perform duty with troops for a time, return to SAAA to take the other short gunnery staff course, and then be awarded his "big G."

Long and Short Gunnery Staff Courses, NCO's. These courses for enlisted ranks are similar to the officers' gunnery staff courses, but more emphasis is placed on practical work with matériel. Graduates qualify as assistant instructors in gunnery and achieve advancement in rank and position.

Young Officers' Course. After graduation from the Royal Military Academy, a newly commissioned artillery officer is known as a YO until his first assignment to a regiment. Training of these young academy graduates in AAA work is the task of SAAA. Formerly, this instruction was given at Manorbier; now it is given by a AAA Wing at the Artillery School at Larkhill. This wing is manned by instructors trained by SAAA. The US equivalent of this instruction is the branch basic instruction given to newly commissioned officers.

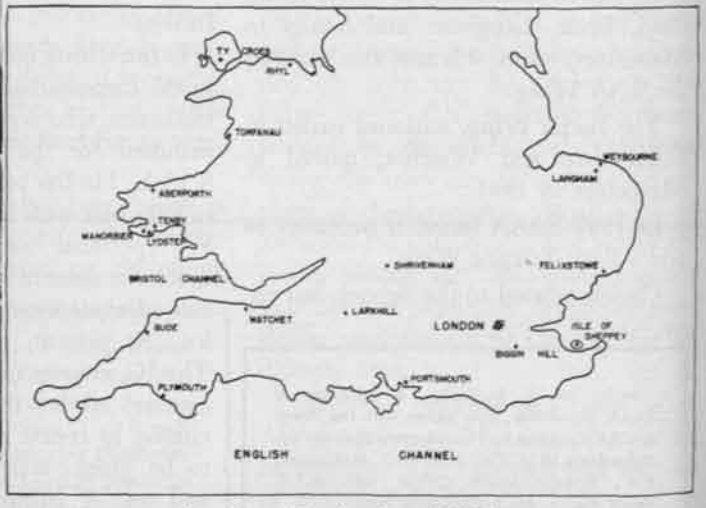
Senior Officers' Course. This course is given only when required. Senior artillery officers attend to be indoctrinated in the latest developments in AAA matériel and tactics.

Specialized Courses. As required, special courses are given to train Kine theodolite operators, OQ 3 (RCAT) operators, AAOR personnel, and aircraft recognition experts.

Regimental and Assistant Regimental Instructors Courses. These courses instruct officers and enlisted ranks respectively in the operation and maintenance of the organizational equipment.

Territorial Army Courses. Numerous

Class at 40mm firing point. Note temporary classrooms in background and distinctive headgear worn by Assistant Instructor in Gunnery.



Southern England and Wales.

courses of one or two weeks duration have been held to instruct TA officers and enlisted ranks. Most students attending a course of this type have had wartime AAA experience, and the course, therefore, serves as a refresher.

Foreign Students

SAAA trains student officers of many nationalities—US, Canadian, Maltese, Dutch, French, Norwegian, South African, Indian, Australian, Egyptian, New Zealander, and perhaps others. It was pleasant to find that any information desired on new AAA trends was cheerfully made available to US officers. In no instance was information denied because of the fact that a US student was foreign.

Liaison with other Service Agencies

Artillery School. In analyzing the relationship of SAAA to the Artillery School at Larkhill, it must be remembered that prior to 1939 a very small proportion of regular army RA personnel was assigned to antiaircraft artillery and that the majority of AAA units belonged to the Territorial Army. This means that following the war vitually no regular artillery officers were trained in the technique and tactics of antiaircraft artillery. In general, temporary officers had been taught this new branch. Emphasis on defense against air attack has meant a great peacetime expansion of antiaircraft artillery. Therefore, there has been a conversion of many officers from field artillery to antiaircraft artillery by means of instruction given at SAAA.

The British are strong for the "one regiment" idea in artillery. This idea is fostered in official and unofficial publications, by close contacts between the two schools, and by varying an individual officer's assignments within the Royal Regiment of Artillery. As mentioned previously, a Young Officer is given all of his basic artillery indoctrination now in one place—the Artillery School at Larkhill.

However, it has been necessary to define rather closely the responsibility for instruction of antiaircraft artillery personnel between the two schools. The Artillery School is responsible for:

- Instruction in tactical employment of antiaircraft artillery as it concerns Royal Artillery commanders and staff at a Corps or Division level.
- Instruction in field artillery gunnery and antitank gunnery as necessary to enable AAA to shoot in the ground role.
- Preparation of training publications to cover the above items.

The School of Antiaircraft Artillery is responsible for:

- Interpretation of the principles of air defense laid down by the chiefs of staff in order to insure the most effective employment of artillery in the AA role.
- Advice to the director, Royal Artillery, on the application of these principles of air defense.
- All technical and tactical instruction in handling of AA artillery, except as is specifically delegated to field artillery or coast artillery.
- Technical instruction in the engagement of sea targets by AAA guns.
- Cooperation with the Coast Artillery School as regards policy and teaching of siting of the CA/AA battery.
- Assistance in instruction of CA courses in employment of CA/AA weapons in the AA role.
- Preparation of training publications to cover the above items.

Coast Artillery School. The Coast Artillery School also has certain responsibilities in antiaircraft artillery training:

- Advice to director, Royal Artillery, on siting and technical development of the CA/AA battery.
- Cooperation with SAAA as regards policy and teaching of siting of CA/AA weapons.
- Assistance in the instruction of AAA gunnery staff courses in the principles of seaward defense of ports and bases, and the employment of AAA guns in the antiship role.
- Assistance in the preparation of training publications where applicable.

AA Command. SAAA maintains very close liaison with AA Command on gunnery matters. A great aid to this liaison is the furnishing by SAAA of I's G and AI's G to AA Command.

RAF and US Army. Liaison with SAAA is maintained by both the RAF and the US Army through the assignment of special liaison officers.

Influence of SAAA

SAAA maintains a control over AA doctrine through various means. One of these is the fact that all AAA instructors are trained at SAAA. Another factor insuring a uniform AA doctrine is that these SAAA trained I's G (Instructors in Gunnery) are detailed to Territorial Army units as regular army instructors.

In addition, IG conferences are held annually to keep the "IG" in touch with SAAA. I's G come to these conferences from such distant points as India, Gibraltar, Middle East, and from the British Army of the Rhine. The conference lasts about one week, and the agenda includes all new developments in AAA matériel or thought.

However, the most effective means of promulgating SAAA doctrine was through a variety of excellent publications. These school publications have included:

- *Antiaircraft Training Instructions.* This type of document is published as required to outline drills on new equipment prior to the publication of official literature.
- *The Bulletin of the SAAA.* This was published quarterly from early 1942 until April, 1946 when its publication was suspended by order from the War Office. This was an exteremly valuable publication, and its loss left a vacuum which has been only partially filled by the *AA IG Letter.* The *Bulletin* described all new equipment or technique for AAA personnel.
- *The AA IG Letter.* This is published at irregular intervals and is circulated to I's G and units throughout the world. (Similar to the *Newsletter* as formerly published by the AA&GM Branch, TAS.)

In addition to the SAAA publications listed above, many AAA articles appear in publication of the Royal Regiment of Artillery—*RA Notes.*

A final and commendable effort to keep AAA practices in the field in agreement with SAAA practices was the establishment of a special staff section under the chief instructor, SAAA, for the purpose of receiving and answering letters of inquiry from individuals or units not in contact with the school.

Conclusions

It is believed that the administration and methods used at SAAA, Manorbier, should be carefully studied, especially to decide the merits of:

- Providing a special course of instruction at the AA and GM Branch, TAS, for *all* AAA instructors. Instructors for AAA Instruction Teams for overseas commands are now trained in a

special course. However, somewhat neglected on technical AAA matters have been National Guard, ORC, and ROTC instructors. They would be much better qualified after having attended a special course designed for their training as AAA instructors.

- Selection and training of qualified enlisted men to supplement officer instructors on a much greater scale than presently used. In order to secure and keep a good man in this type of work, he must be given some special prestige and the possibility of advancement.
- Establishment of a correspondence department at AA and GM Branch, TAS, for the sole purpose of answering letters of inquiry from officers located away from the school. At present valuable information of this nature is exchanged only on a personal basis.

Generally speaking, the SAAA approach to the problem of training military personnel is similar to that used in US service schools. The results achieved in both cases are excellent. It was very evident that SAAA had adopted certain US techniques in training. And it was equally evident that SAAA, Manorbier, has many good ideas and techniques.

"Scots wha' hae wi' Wallace bled. . . .": Pipers of the 586th Light AAA Regiment furnished music for a review of the 39th AAA AW Bn. Col. Metticus May, commanding the 32nd AAA Brig. and Lt. Col. Peter J. Lacy, CO of the 39th with members of the Bn. staff take the review at Schulthrope, England. An hour-long bagpipe concert followed the ceremony.

AAA OFFICER CANDIDATE SCHOOL

By CAPTAIN JOSEPH E. MELANSON, JR.

THE assembly line is just about in full swing at the Fort Bliss OCS, where approximately one hundred second lieutenants are commissioned each month. These eager lads are joining fellow antiaircraftsmen in units located throughout the country.

The first three graduating classes provided the Army with three hundred new officers. Graduates of the first two classes were assigned to antiaircraft battalions in the various continental Army areas. Members of class three, almost to the man, were assigned to units stationed at Fort Bliss. Many of them are presently on duty with the AAA RTC.

The three hundred who finally achieved the goal of a commission were among the 582 who were initially enrolled in the classes. The attrition rate was high; but those associated with the school feel that when the seal of approval is placed on an OCS graduate, he is ready to be a credit to his fellow artillerymen wherever he may serve.

Candidates fail to graduate from the school for a multitude of reasons. Perhaps the greatest determent to successful completion of the course is termed lack of motivation. This is a catchall category and one of the reasons why a candidate may be so tabbed is that he lacks in military experience. Some of the men reporting to OCS have been in the Army a very short time and the hardships of their new environment make it difficult for them to meet the rigorous standards of the school. Others fall into this category because of shortcomings in their educational background. An individual may report to OCS having had little or a great deal of formal education. However, he may have had this formal education in fields divorced from the knowledge needed to master the academic work demanded of him at OCS. Others in the lack of motivation category resign to avoid involuntary relief from the school.

Specifically, if a candidate decides that for some reason he is unable to successfully complete some portion of the curriculum he may elect to resign rather than be discharged because of his shortcoming. Then there are some who resign because they feel that after being at OCS for a period of time, they are

no longer desirous of becoming an officer. Candidates who have observed that their tactical officers are not clock watchers have been heard to express, "I didn't know an officer had to work; I thought he spent all his time at the club or on the golf course. If I have to work as hard as these officers after I get my commission . . . well I just don't want any part of it." Others resign because they were not assigned to the OCS of their choice. When a man applies for OCS, he is required to list three choices of branches in which he would like to serve. Some who have resigned say, "My first two choices were in the service branches, and I was required to list my third choice as one of the combat arms." The Army attempts to assign candidates to schools of their choosing; but in the final analysis the quotas are filled according to the requirements as specified by the Department of the Army.

Finally, candidates in the lack of motivation category do not complete the prescribed course for personal reasons, such as family difficulties.

A question often asked of those affiliated with the OCS is, "How many candidates do you discharge for disciplinary reasons?" Actually the number falling into this category is amazingly small. To date only three candidates have been discharged from the school for disciplinary reasons.

Physical defects take a sizable toll from the rolls. The requirements are demanding and an individual who may have a minor defect which normally would be no handicap finds himself in difficulty at OCS. A person susceptible to eye strain, for example, may find that cracking the books night after night is more than his eyes can endure. Or an old football injury, which has not bothered him for years, may kick up on a candidate as he undergoes some of his rigorous physical exercises preparing for the five PT tests he is required to take. In the first three classes a total of thirty candidates were not graduated due to a physical defect of some nature.

Candidates must attain a certain proficiency in military leadership. They are constantly observed by their tactical officers to determine if they possess the qualities which will enable them to lead men to battle. The candidates are assigned many of the 53 position of responsibility in a candidate battery such as battery commander, platoon leader, or section leader. While performing in these positions, candidates have ample opportunity for demonstrating any leadership potential they may possess. It was determined that twenty-five did not possess these desirable qualities in the first three classes, and these candidates were released from the school.

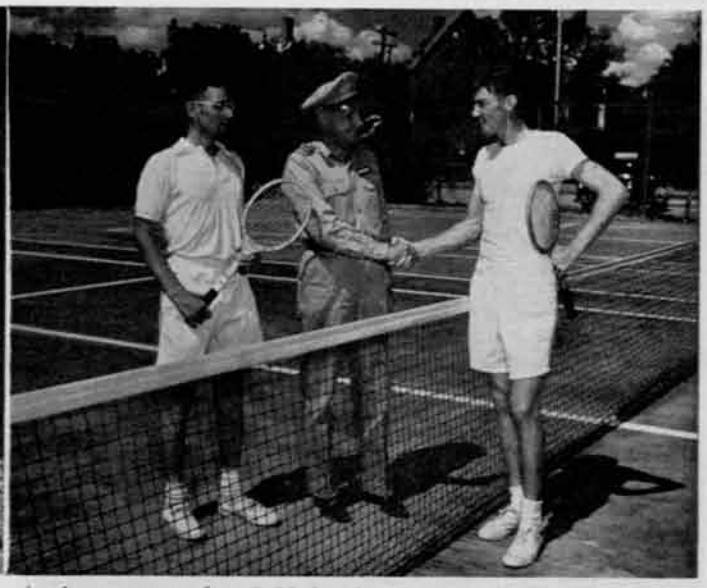
As can be expected, one of the biggest reasons for discharge from the OCS is failure to meet the requirements of the academic portion of the course. In the first three classes sixty-one candidates were released because they could not meet the academic standards. Candidates not possessing an aptitude for mathematics often experience difficulty in completing the course. A high correlation has been found for example between the results of a candidate's work in math and his grade in communications or in surface gunnery, where the artilleryman is required to apply a knowledge of mathematics.

Because of the importance of mathematics and related subjects, emphasis is placed early in the curriculum of each class on giving candidates who need extra instruction, every opportunity to receive needed coaching. Officers devote many hours during the evening to extra classes and individual tutoring. Due to this extra work, many candidates have been kept from falling by the wayside.

Candidates are assisted in the solution of personal problems in an attempt to graduate as many who are worthy as possible. All personnel of the OCS department are available to the candidates, 24 hours a day, guiding them through any difficulty.

Though the pitfalls on the road to an OCS commission are many, a constant effort is being made toward the goal set by Colonel Robert H. Krueger, Director of the OCS, who stresses to members of his department that, "Nothing would please me more than to graduate one hundred percent of every class."

Col. R. H. Krueger congratulates distinguished military graduates, *left to right:* Francis P. Gross, III, John G. Christopher, Thomas R. Callahan. Distinguished graduates must be in the upper 10 percent of their class and are recommended for Regular Army commissions.



A clean sweep for OCS in the Fort Bliss tennis tournament and a hearty congratulation from Lt. Col. George J. Bayerle, Jr., Assistant Director, OCS. *Left to right,* Candidate Charles E. Shaaf, Colonel Bayerle, Lt. Frank W. Sample.

The Far East Antiaircraft Artillery School

By LT. COL. WILLIAM H. NICOLSON

Commandant

The requirements for the AAA School in the 40th AAA Brigade and their problems appear to be typical of what may be expected in any active theater in War.

In 1942 we had a like requirement in Alaska. Several regiments had been rushed up from training centers where their AAA training with the few available weapons was deficient and their training in maintenance was deplorable.

The officers and key men needed to learn a lot more about their gunnery. They also needed to learn how to operate, adjust, and maintain their equipment. Ordnance machinists were not available. Simple gun repairs might be accomplished, but if an AAA director were sent to local Ordnance for repair, their only solution was to send it back to Benicia Arsenal and requisition replacement. It was obvious that the troops needed to do a great deal more for themselves and equally obvious that each battalion needed to conduct intensive and practical AAA gunnery and maintenance schools.

The first requirement was to train instructors for them. So the 42nd AAA Brigade Headquarters organized school courses for that purpose. Lt. Col. Seymour I. Gilman (now Colonel) organized the course for gun battalion officers. Lieutenant Wm. F. La Hatte (now Lt. Col.) organized the course for AW officers. Lieutenant Edwards organized the course for radar officers.

The general plan was that two officers from each AW battalion would take the Brigade AW course and then return to their own battalions to give the same course to officers and selected men. The same scheme applied to the other courses.

The courses were designed primarily for the battalion garrison schools. The schedules and all work sheets were prepared on that basis. The emphasis was placed on the student's work with his hands and brains on the equipment he had to master, with particular attention to adjustment and maintenance.

When these students returned to their respective battalions they took with them prepared schedules and work sheets for the courses they were then to give. Most of them turned out to be able instructors with gratifying results throughout the command.

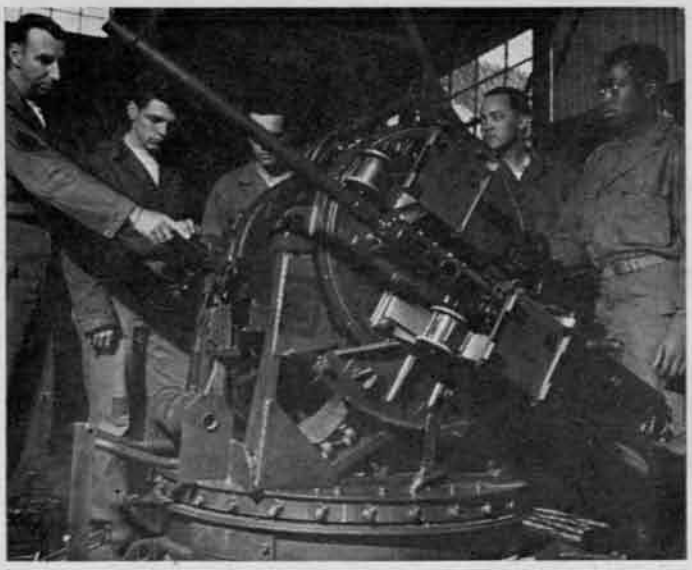
As the schools progressed the attendant improvement in AAA operations and maintenance in the units was particularly gratifying.

THE 40th AAA Brigade operates the Far East Antiaircraft Artillery School (FEAAAS) at Camp Moore, Honshu, Japan.

The units of the 40th AAA Brigade are deployed tactically in Japan over a vast area. The command chain is normal; that is, from brigade to group to battalion. Operational control, however, is accomplished at the group level through the air division in which deployed. Details of operational control are worked out between the Commanding General of the 40th AAA Brigade, Brigadier General James G. Devine, and the Commanding General of the Japan Air Defense Force, Brigadier General Delmar T. Spivey.

The standardization of operational control requires that AAA unit procedures be systematized. In exercising training management over such widely separated units, General Devine relies heavily on FEAAAS to provide uniform training of key individuals. The subordinate units in turn use the students trained by FEAAAS as instructors in decentralized training so essential in units deployed tactically.

During the period from June 1950 to September 1951, 40th AAA Brigade units in Japan were relatively stable due to the freeze on rotation. Most critical specialists were on the job and relatively few changes occurred. Units had been deployed a few months before war broke out in Korea and were maintaining their alert status, building their positions, constructing their own housing and fortifications, and continuing training. During this period the FEAAAS courses were designed to raise standards of efficiency in the employment of AAA armament with the emphasis on accuracy in firing and proper maintenance of equipment. Courses were conducted for battery officers, range platoon sergeants, gun platoon sergeants, and AW platoon sergeants. The graduates in turn carried on the training in their respective battalions. This procedure paid



SFC Spears conducting LAA Artillery Mechanics class on M45 Turret.

Major Demarcy conducting LAA Fire Control Mechanics class in Checks and Adjustments of the M5A ( ) Director.

off in increased efficiency and improved shooting in all units of the brigade. During this period the pipeline provided a trickle which equaled our normal losses by attrition.

Rotation was resumed in September 1951. The loss of weapon and platoon chiefs did not greatly impair efficiency inasmuch as previous training had qualified replacements within the units. The pressure became acute, however, when certain specialists moved out and the pipeline stream did not increase enough to meet foreseeable needs. Existing schools in the Far East Command were capable of providing training in some of these fields. Responsibility for training in the others was placed upon FEAAAS.

In order to provide this training FEAAAS initiated an expanded program in February 1952, which is still current, consisting of the following:

AAA Battery Officers Course
Heavy & Medium AA Range Platoon Sergeants Course
Heavy & Medium AA Gun Platoon Sergeants Course
Light AA Platoon Sergeants Course
Target Acquisition Radar Operators Course
Radio Operators Course
Radar & Fire Control Mechanics Course
Communication Chiefs Course
Field Radio Mechanics Course
Light AA Fire Control Mechanics Course

Lt. Galambos, Communication Division Chief, and the Field Radio Mechanics class.

Light AA Artillery Mechanics Course
Heavy & Medium AA Artillery Mechanics Course
Unit Supply Specialists Course

The FEAAAS is organized to include a division each for heavy and medium AAA, light AAA, target acquisition and fire control, and communications. The present strength of the faculty and school detachment is 15 officers, two RCA civilian technical representatives, and 48 enlisted men. Due to the FEC troop ceiling the spaces used to operate the school presently come from the spaces authorized brigade T/O&E units. The school detachment and all enlisted students are attached to Headquarters Battery, 40th AAA Brigade, for administration.

Most of the present instructors have had field duty with brigade units in Japan before teaching in the school. Thus field conditions are constantly being considered in all instruction. All of the enlisted instructors are actively engaged in practical work with the students in various courses and in the maintenance of the equipment used by the school. Many of these enlisted instructors also do a lot of platform work.

The equipment used in training has been acquired through special letters of authorization. Most of the training aids have been made locally, much of the basic materials coming from various salvage yards.

Activities at FEAAAS center around a main building which contains the school headquarters, the administrative office, division offices, six classrooms, and drafting room. Nine laboratory buildings, fire control and gun parks, a 16mm projection room, and a carpenter shop, complete the facilities operated by the school.

All classrooms are well organized and include a platform, speakers stand, blackboard, chart wires, and desks and chairs. Since the school frequently has twelve different courses in session it requires close coordination to make laboratories and classrooms available without conflict.

The school facilities include:

CODE ROOM: A classroom with a 20-position code table and one EE95 Code Practice Set.

40MM GUN LABORATORY: A building with four 40mm Guns, four

H & MAA Gun Platoon Sergeants class on Maintenance.

M5A2 Directors, and four M5 Generators, and is so arranged that classes can be broken down into small groups at each piece of equipment (this is generally true of all the laboratories). Instruction can be conducted indoors or in a suitable area just outside.

REMOTE CONTROL SYSTEM AND DIRECTOR LABORATORY:

A building with five M15 Remote Control Systems, eight M5 Series Directors, five M5 Generators, and various cutaway and breakdown training aids. The laboratory is so arranged that classes can be broken down into small groups for practical work.

Other facilities constructed along the same standards include:

Gun park, fire control park, projection and drafting rooms, carpenter shop, and other laboratories for medium and heavy guns, machine guns, surface gunnery, communications, target acquisition, and radar and fire control.

The Camp Moore recreational and athletic facilities also include some excellent features like a swimming pool, bowling alleys, volleyball courts, a library, and service club.

Major attention is given to stress the practical work accomplished by all students. Method of Instruction procedures are stressed in all courses to provide able and efficient instructors upon return of students to units in the field.

Conduct of the school program is based on the premise that students should be free from other duties during course instruction. Passes are freely granted if individual academic achievement is above the required level. The resident instruction progresses at a very rapid rate, however, and most students find the need for several hours of study each night in preparation of the next day's assignment. There is a noticeable lack of disciplinary problems in the operation of FEAAAS.

Since FEAAAS is operated as an activity of the 40th AAA Brigade, its facilities are used freely in checking out new procedures before placing them in effect in the field. Instructors are used regularly as part of brigade inspection teams and thus have a chance to see the need for, and results of training given by the school.

Although FEAAAS was established to meet 40th AAA Brigade needs, these facilities have been made available to many other units and branches of the service. Quotas are allocated by the S3 section to AAA units from the Ryukyus, Korea, and divisional AAA units in Japan. Marine and Air Force students are frequently in attendance. During the period from June 1950 to December 1951, 492 officers and 1549 enlisted students from a total of 44 organizations were trained in the various courses then conducted at FEAAAS. This year's programming plans for about 1700 students. The maximum capacity of FEAAAS as presently established is 250 students at any one time.

The need for centralized AAA training in this command has been well established. The heavy personnel turnover of all units in the next eight months with generally inadequate replacements indicates that specialists will have to be trained locally for some time in the future. Efforts are still being made to get special authorization for a Table of Distribution to operate this school in order to avoid the evil of drawing topflight personnel from brigade units in the field for this purpose.

It is assumed that future needs of the brigade may change. Accordingly, FEAAAS is a flexible organization and stands ready to provide training where the need is demonstrated.

DIESEL GENERATORS

By CAPT. FRANK J. JANSEN

40th AAA Brigade

AFTER the outbreak of the Korean conflict, medium and heavy AAA gun battalions were deployed in defense of key installations in Japan. The T/O&E pertaining to the above type organizations authorize the issue of unit generator M18. Only fifteen per cent of this type generator was available to the units, the remainder being substitute M7, M7A1, M15 or M15A1 generator sets. Much difficulty was experienced during the early months in maintaining the substitute unit generators assigned the organizations due to continuous operation, run-down equipment and lack of spare parts.

By December, 1950, when the Corps of Engineers became responsible for storage, issue, and maintenance of generator power units M7 through M18 used by the AAA, it was realized that a critical condition existed and a solution had to be found.

Figure 1—Diesel Generator RD-14A.

The idea of using commercial power was considered but soon discarded. The frequency of Japanese commercial type power is 50 cycles with a maximum output voltage of 100 volts. Also commercial power plants and associate equipment may easily be rendered unserviceable by enemy action. Efforts were then directed to locating a suitable substitute for authorized gasoline-driven generator unit among presently stocked engineer generator sets. Generator set, portable, diesel engine-driven, skid mounted, 30 KW, 127/220 volt, three

Figure 2—Transformer.

phase, sixty cycle, was found to be available and tests were begun.

The Ready Power International Diesel-Electric Plant is a heavy duty, completely independent source of electrical energy; which will render unusually long and efficient service for continuous production of power. This plant has the necessary requirements both in speed control and close regulation of voltage and frequency, which is so necessary in present AAA fire conrtol equipment.

To extend the voltage control of the RD-14A down to 120 volts for three phase operation, as required by AA equipment, a step-down transformer had to be added. A series of tests to develop a pilot model were conducted at the 40th AAA Brigade, Far East Antiaircraft Artillery School at Camp Moore and a final type transformer package was agreed upon. This transformer unit would be entirely separate and would simply be connected to the basic RD-14A, diesel generator by using two 25 foot jumper cables. Necessary instruments, to control final output of the unit and for testing purposes, were included on the portable transformer.

In order to facilitate the hook-up of jumper cables to the diesel unit, two adapters were installed on the generator. One is a standard three-plug receptacle assembly used on the M7, M15 or M18 generators. The other is a special six pole, six conductor receptacle that leads to the automatic voltage regulator.

The transformer is compact, light, weatherproof, and constructed for outdoor service. The transformer, switchboard and convenient outlets are skid

Figure 3—Cable connections for Generator RD-14A.

mounted and protected by a housing consisting of steel frames and a cover. This package unit is a semipermanent installation at the present time; however, it is believed that this generator-transformer unit could be mounted in a suitable trailer and be made completely mobile. At any rate, the modified RD-14A diesel generator has proven to be the solution to the generator problem in the AAA gun battalions of the 40th AAA Brigade in Japan.

TRACER EXPEDIENT

By CAPT. FRANK J. ROMANO

TRACER elements in certain lots of AAA AW ammunition have deteriorated to the extent that they are practically useless. As a result many thousands of rounds are to be either disposed of or reprocessed at great expense. A simple solution that restores such ammunition to use, at least for training, has been tried locally on 40mm antitank ammunition and found to be highly successful. A small quantity of wax spread on the nose of a projectile, at least one traveling at about the rate of 2700 feet per second, will apparently evaporate, leaving a distinct, heavy vapor trail that can be easily substituted for a tracer stream for observation and adjustment.

The wax used in this instance was Signal Corps Sealing Compound, No. 31-C-1613-30, which is basically wax in substance and used extensively as a preservative in protecting equipment against moisture.

Tests conducted here in the Canal Zone using this compound have consistently produced suitable trails up to 1000 yards and fire adjustment corrections were easily applied from trail observation. The point where tracer was best observed was found to be a few feet from the gun target line on the upwind side of the gun.

Observers check Tracer Trail.

No apparent ill effects in functioning of the gun or ammunition have been observed to date as a result of firing this modified ammunition.

Preparation of Ammunition: Prior to coating, the ammunition should be wiped clean so that the windshield portion of the projectile is free of dirt or foreign matter. The sealing compound is melted down into liquid form and placed in a number ten can or other suitable container with a horizontal reference mark inscribed on the inside of the can so that immersion to the same depth of all projectiles to be dipped is facilitated. This particular sealing compound remains in a liquid form for a relatively long period and it is therefore not necessary, to keep the can in direct

contact with the heating source. The aforementioned reference mark should allow for immersion to the depth of one and one-half inches. If the coating on the projectile extends back from the tip on the ogive portion of the windshield any farther than this, fouling of the breechblock and bore may result during firing.

The amount of coating required may vary with climatic conditions and type of wax used. Here in Panama we have settled for a three Dip standard which is suitable. This amount of dip results in approximately 1/16 of an inch thickness. After the last dip is made, the excess compound on the tip of the projectile should be tapered off so the projectile guide on the automatic loader doesn't become fouled during feeding. To speed solidification a cold water dip may be used when the desired thickness is attained.

The coated ammunition should be returned to the cardboard containers so that no foreign matter will collect on the compound. It is recommended that the containers be stood on end to minimize damaging of the smooth coating of compound. In addition, this will also facilitate the removal of ammunition from the containers at the firing range.

During firing, the number seven man should modify his loading habits by moving his left hand back a few inches to prevent roughing up of the coating. The ammunition handlers should be particularly observant and inspect each round in the clip before passing it to the number seven man making sure that no foreign matter has collected on the round.

This modification has already resulted in substantial savings and should be a good selling point to get the go ahead signal permission for modification.

The application of this process to all 40mm HE ammunition for use in AA fire should be just as successful as the AP experiments and is expected to be tried locally at an early date.

If this modification is used on ammunition with PD Fuzes, necessary precautions in application of the coating should be observed to avoid fouling of the fuze working parts, which might result in duds. In addition, the weapons employed in firing such modified ammunition should be checked from time to time to insure against undesirable fouling of the weapons.

YOU AND YOUR FIELD TELEPHONE EE-EIGHT

By CAPTAIN WILLIAM F. BROWN

AA & GM School

AN artilleryman without communications is about as effective as a fan dancer acting before a blind audience. No matter how much radio communications are employed, telephone communications will be employed more. It is important therefore that we know how to make a few simple tests to determine whether or not our telephone will work and how to perform a few field expedients to keep it in operation when trouble occurs.

If you happen to be a liaison officer, forward observer or stationed on an outpost, a few minutes spent in testing your telephone before leaving headquarters will often save you a long trip back. More than that it may prevent you from being without communications when good communications are most vital for your own safety and that of your unit.

Too many of us never give communications a thought until we are without it. Then there is great wailing and gnashing of teeth and many indignant reports to the communications officer. This falling back on the officer directly responsible for the technical maintenance of our electronic devices is only natural. Natural because most of us, when confronted with an electronic malfunction, immediately jump to the conclusion that we lack the technical background necessary to make even minor repairs. No technical background is needed to understand and make the tests or perform the field expedients outlined herein.

Before testing a telephone it should be inspected to make sure the batteries are installed properly and making good contact. Contacts should be clean and free of grease. New batteries sometimes have a thin coating of protective grease over them that may cause a poor connection. Turning the batteries in place will remove this grease as the positive contact on the telephone itself is made rough just for this purpose.

Looking down on the telephone from above, a screw switch will be seen which has two positions, LB and CB. This switch must be turned all the way toward LB if the phone is to operate on a local battery. Field telephones are generally operated on local battery systems. However if a common battery system is employed, the screw switch must be turned in the direction of CB as far as it will go.

Inspect the receiver and transmitter caps to see that they are screwed down tight and straight.

Inspect the handset cord for breaks and proper connection. The black wire should be connected to the T & BATT + terminal, the red wire to *C* terminal and the white wire to *R* terminal. A metal band is fastened around the handset cord giving this key for connecting to the terminals. If the handset cord terminates in a plug which plugs into the phone these connections are already made. Since the plug will go in only one way, it is impossible to make the wrong connections.

This completes the inspection and we

can now make our tests. The telephone EE-Eight has only four circuits that need be tested. A satisfactory test indicates the telephone is in good operating condition. The four circuits are generator, ringer, listening and talking.

These tests are most easily made with the aid of another telephone known to be good which is referred to as the test telephone.

To make tests insert batteries in both telephones. Connect the two telephones together with a short piece of field wire connecting one end of the wire to L1 and L2 terminals of one phone and the other end to L1 and L2 terminals of the other phone.

To test the *generator circuit* turn the generator crank of the telephone being tested. This should cause the test telephone to ring.

To test the *ringer circuit* turn the generator crank of the test telephone and the telephone being tested should ring.

To test the *listening circuit* have someone talk into the transmitter of the test telephone. If the conversation can be heard in the telephone being tested the receiver or listening circuit is good.

To test the *talking circuit* simply talk into the transmitter of the telephone being tested and if the conversation can be heard in the test telephone there is nothing wrong with the talking circuit.

The above tests, with the exception of the ringer circuit, can be made even if a test telephone is not available. Without a test telephone to test the *generator circuit* place your fingers across terminals L1 and L2 and turn the generator crank. A shock will be felt if the generator is good.

To test the *talking circuit* place the receiver to your ear and blow into the transmitter. A rushing sound should be heard. Also operate the handset switch and a clicking noise should be heard.

To test the *listening circuit* place the receiver to your ear and turn the generator. A fluttering should be heard in the reciver.

Even after the above tests prove a telephone to be good, trouble will sometimes develop. Remembering that there are only four circuits in the EE-Eight we can expect trouble in a limited number of places. A short or open in any one of these circuits or a short or open in the line itself will result in trouble. If we know the symptoms for each of these conditions we can analyze the trouble and make use of various field expedients to keep communications intact. A listing of trouble, symptoms and field expedients follows:

Trouble & Symptoms	Expedient
Shorted generator Defective generator turns hard. Cannot ring out but can ring in.	Signal the switchboard or distant phone by making a short across handset terminal T to L2. A loud clicking will be heard at the distant phone causing operator to answer. Talking circuit is unimpaired.
Open generator Defective generator turns easy. Cannot ring out but can ring in.	Same as for shorted generator.
Shorted ringer Can ring out but cannot ring in. Generator turns hard.	To talk in and out turn generator crank ⅛ turn and hold in. To receive incoming ringing signal hold line in fingers or tie to toe. Shock will be felt on incoming rings. If a plug type U-4/GT, a component part of switchboard SB-18/GT is connected across L1 and L2 a visual signal will result on incoming rings.
Open ringer Can ring out but cannot ring in. Generator turns easy.	Hold line in fingers or connect plug U-4/GT as for shorted ringer. Not necessary to hold generator crank in to talk in and out.
Shorted transmitter Can ring out and in. Can listen but cannot talk out. Loud click heard in receiver when handset switch is operated. Can hear no side tone (rushing noise) when blowing into transmitter.	Use receiver to transmit and receive. Talk very loud.
Open transmitter Can ring out and in. Can listen but cannot talk out. No click in receiver when handset switch is operated. No side tone.	Same as for shorted transmitter.
Shorted receiver Can ring out and in. Cannot talk in. Can talk out. No side tone. No shock felt across C & R terminals of handset when generator is turned.	There is no field expedient for a shorted receiver except new receiver may be installed if available.
Open receiver Can ring out and in. Cannot talk in but can talk out. No side tone. Shock felt across C & R when generator is turned.	No expedient. Must install new receiver.
Shorted line Generator turns hard. Cannot ring out or in. Cannot talk out or in.	Short must be located and repaired.
Open line Generator turns easy. Cannot ring out or in. Cannot talk out or in.	Open must be located and wires spliced together.

Moving into Newark from Fort Hancock, Battery D, 41st AAA Gun Bn. receives the keys to the city as they prepare an antiaircraft demonstration on Armed Forces Day. Mayor Villani greets the unit at City Hall, Captain Peter Garambrone, commanding.

RCAT'S IN JAPAN

By 1st LT. LELAND V. HAMLIN

SIXTY miles due East of Tokyo, on the sandy and windswept beach of the Chiba Peninsula, lies Katakai Firing Range which is operated by the 138th AAA Group under the command of Colonel William L. McNamee.

The battalions in the group go there for their thrice yearly firing practice. Frequent visitors too, are the divisional AAA AW battalions stationed in Japan, Air Force Ground Defense Units, and AAA AW units of the Marine Corps. Also, Katakai has played host to the 21st, 25th, 50th, 140th, and 933rd AAA AW Battalions as they trained prior to moving on to Korea.

Stationed permanently on the range, are the 31st and 36th Radio Controlled Airplane Target Detachments. Each composed of one officer and eleven enlisted men, they operate and maintain the OQ-19D Radio Controlled Airplanes used for target practice at Katakai. From 1 January, 1951, through December of the same year, 395 Target Planes of the OQ-3 type were launched, and 137 were expended by reason of gunfire. This indicates almost three flights per target which is an excellent average for this type of plane. These Detachments provided targets also at three other Antiaircraft Ranges in Japan during 1951.

In April, 1951, the 36th RCAT Detachment, taking twenty targets and an A-2 Catapult, moved by rail to Misawa Air Force Base in Northern Honshu, and spent five weeks on the range located there, flying target planes for the 865th AAA AW Battalion and the 753rd AAA Gun Battalion. In August, the residents of Hokkaido, the Northernmost Island of Japan, were startled to see small red and white airplanes buzzing angrily through the sky overhead. The 31st RCAT Detachment were flying them for gunnery practice of the 145th AAA AW Battalion (SP). The 31st had been airlifted from Katakai to Hokkaido in "Flying Boxcars," carrying twenty targets and a catapult with them. For six weeks they remained, flying a total of 47 missions and expending all

OQ-19D descending by parachute after control release.

their targets before returning. In October the 36th RCAT Detachment was airlifted South to the newly set up AAA Range on Kyushu. The 36th returned to Katakai six weeks later after having flown targets for the 507th AAA AW Battalion and the AAA AW Battery of the 187th Airborne RCT.

Soon after the 36th RCAT Detachment had returned to Katakai the supply of OQ-3's became exhausted and the OQ-19D was received in its place. It was completely different in construction and operation and required entirely new concepts of flight characteristics and techniques in control and maintenance. Where the OQ-3 had consisted of a fabric-covered metal framework and wooden-ribbed wings, the OQ-19D was a sleek, all-metal plane. In place of the two cylinder, eight horsepower engine with its one gallon fuel tank, the new target possessed a powerful four cylinder, seventy-two horsepower engine, and had a fuel capacity of eleven gallons. Also, the electronic equipment was new and a different method of launching was involved. Although the personnel of both RCAT Detachments had been successfully flying the OQ-3 Target it was nevessary to secure qualified instruction on the new type target before attempting to operate it.

The Air Force came to the rescue in the form of Captain William D. Ross of the 6114th Tow Target Squadron. Captain Ross arrived at Katakai Firing Range on 4 January, 1952, and remained until 19 January, during which time he gave ten hours of flight instruction to myself and to 1st Lt. Robert L. Wittnebel, CO of the 31st RCAT Detachment. He also gave over fifty hours of instruction to maintenance personnel of both detachments.

Launching the OQ-19D is accomplished by means of a three wheeled launching cart which travels around a hard top circular track, two tenths of a mile in circumference. Thrust from the propeller provides propulsion of the target and cart and they revolve around the track at increasing speed until sufficient flying speed is attained. The target is then released from the cart into free flight by means of an electrically operated solenoid. At present the only launching site in Japan is the one located at Katakai. However, plans are under way for the construction of additional launching sites and it is expected that in the near future the RCAT Detachments will again be "on the road."

The OQ-19D is a much better target for Antiaircraft firing practice than was its cumbersome predecessor, the OQ-3. In horizontal flight it is capable of speeds in excess of 200 miles per hour and can perform all of the aerobatics that are accomplished by conventional aircraft, to include loops, rolls, Immelmans, chandelles, and even tailspins. So far at Katakai, the OQ-19D has only been used for Automatic Weapons firing but personnel of the RCAT Detachments are anxiously awaiting the day when they can provide missions for heavy AAA. In flying courses for AW units with the OQ-19D it is possible to provide almost any type of course.

The target can be put through its paces simulating the evasive action of a jet fighter, which makes it an elusive and tantalizing streak of red in the gunners' sights. The usual procedure at Katakai is for an AW unit to fire upon a towed sleeve in the first stages of training and for record fire, and to fire on

RCAT's in the later phases. The type of course to be flown is largely dependent upon the proficiency of the firing unit. For a well trained unit the target must be flown at maximum ranges and evasive action taken to prevent excessive target losses. The effect on morale of firing on a "live" target is worth mentioning. A touch of realism is added to the firing and the elation of the crew that has downed a "Cat" is evident to all in sight or hearing.

Due to an agreement with the local Japanese fishermen, firing is permitted at Katakai only during the afternoon hours. The mornings, however, are used for tracking missions.

Since Katakai is an overwater range, a great majority of the targets brought down by gunfire fall into the sea. Each of the RCAT Detachments has a "Duck" for use in recovery. The nautical RCAT-men sometimes go a mile out into the Pacific to retrieve a fallen target. The wing of the target is filled with a light buoyant plastic which will float the plane indefinitely. When the water is too rough for safe operation of the "Duck" the downed targets are carried down the coast by prevailing currents. A great number of them are eventually returned by the cooperative Japanese Fishing Fleet.

The RCAT Detachments are continually striving to give the best possible target support to the units they service. In March of 1952 a series of successful tests were run, utilizing the OQ-19D in the towing of target flags. A quarter section of an A6B Target Flag was used for the test which provided a flag twelve feet in length and three feet in width. Parachute shroud lines were used to make a tow cable 600 feet long, a length which provides ample protection to the OQ while the flag is being fired upon. The resulting target rivaled the flag towed by present conventional aircraft, being just as fast, providing a wider variety of courses, and excellent visibility.

65th AAA GROUP IN THE FIELD

By SFC DON HATT

TWENTY months ago the officers and enlisted men of the 903d and the 764th AAA Battalions of the Canal Zone's 65th AAA Group, commanded by Colonel Sanford J. Goodman, moved out of their cozy barracks and hit the dusty trail to field alert positions which had not been occupied since the days of World War II.

"Just for a few days," went the rumor as the men searched for the former positions, obscured by the lush tropical life of Panama. Some of these positions couldn't be found until weeks after the move to the field.

As the weeks turned into months, ceaseless training and tactical build-ups welded the antiaircraft defenses of the Panama Canal into a cohesive unit.

With the primary defense mission well in hand, the troops turned their ingenuity to improving their living conditions. Salvaged materials were gathered together and ramshackle open-air facilities soon became comfortable installations.

A "mobile sick-call" was established; jungle-chapels were set up; NCO Club-PX's were built; motion picture theaters came into being where iguanas once dwelt; flowers were planted around the tight and homey barracks; I&E rooms were constructed; playing fields and courts were laid out; mobile libraries and USAFI facilities were made available; and even little doghouses were built out of the final odds and ends of the salvaged materials. All in all, the field positions slowly became more desirable "homes" than had been the garrison barracks in Forts Clayton and Davis—camps located at the Pacific and Atlantic entrances to the Panama Canal.

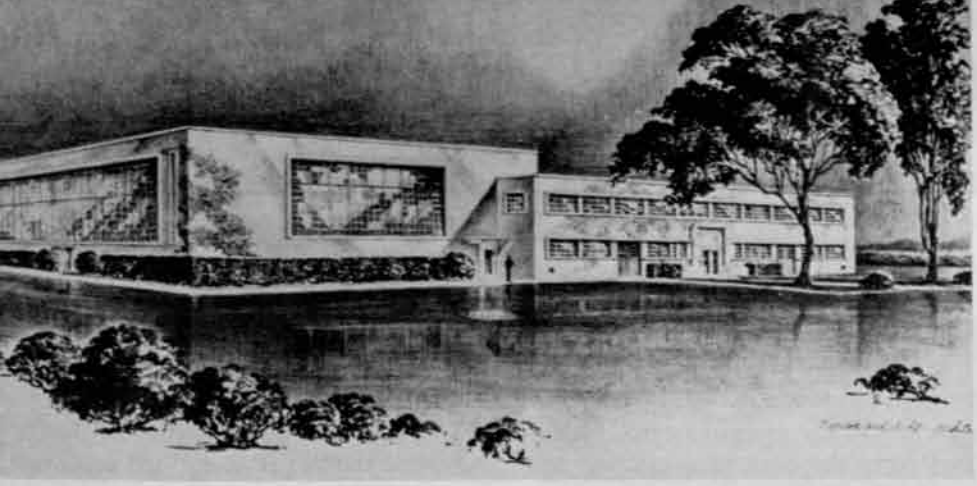
USO shows and soldier-entertainment are being used as much as possible to break the deadly monotony of the field schedule. The Canal Zone AA soldiers' routine is a demanding life. He is on duty from sunrise to sunset, subject to alert duty shifts, and receives one 24 hour pass each eight days, if he is lucky.

Typical of the field position facilities is the outstanding mess hall of Battery D, 764th AAA Battalion. This dining room was literally carved out of a cement bunker originally used to store ammunition for the old seacoast guns. Tastefully decorated, it recently drew the particular interest of Colonel Henry G. McFeely, AAA veteran, on a general staff visit from the Pentagon.

This life in the field has well demonstrated how fortunate it is to have men in each battery with skill and know how as carpenters, plumbers, electricians, and in other like skills. Every battery in the group has demonstrated resourcefulness in meeting conditions as they exist, as well as in developing a strong antiaircraft defense ready for instant action.

U.S. Army Photo

Corporal Crosby, Pfc Teague and Pfc Thompson, Btry B, 903rd AAA Bn., reach their position by rowboat in typical fashion.



NEW HOME FOR A.F.F. BD. 4. The new building of the Army Field Forces Board No. 4 at Fort Bliss, Texas, shown above in an architect's sketch, will be ready in July or August of this year. The wing on the left is for the Guided Missile Shop. A similar wing for an Antiaircraft Shop is planned for the other side. The Board's Support Group, headed by Lt. Col. Wendell B. Sell, will occupy the center of the building. The new Board No. 4 quarters will be 265 feet long and 137 feet wide. It will have a repair and assembly shop 120x120 feet and a two-story wing to house a carpenter shop, machine shop and offices. A feature of the design has been to make the entire building dust and sand proof by special weatherproofing of doors and windows. A forced ventilating system will filter all air in the building. The contemporary architectural design of the structure with colored stucco walls will harmonize with other buildings at Fort Bliss. An Administration building to be located directly in front of this shop building is also planned.

FORT BLISS ACTIVITIES

Command Inspection

LT. GEN. WILLIAM M. HOGE, Commanding General of the Fourth Army, visited Fort Bliss for a command inspection, June 16-18.

Climaxing the command inspection was a dismounted review held on Noel Field at 2:30 P.M., June 18. Four battalions of Fort Bliss troops paraded. Col K. R. Kenerick was commander of troops.

USMA Cadets Visit

Two full days of concentrated antiaircraft artillery and guided missile instruction highlighted the visit of 516 United States Military Academy Cadets to Fort Bliss, June 14-18. In this instruction, the extensive training and range facilities of the Post were utilized.

The cadets witnessed medium, heavy and light antiaircraft artillery in aerial firing on the Fort Bliss ranges and also saw how AA is used in close support of infantry in combat. Another important phase of their instruction was indoctrination in guided missile developments.

Brig. Gen. F. L. Hayden, commanding general of Fort Bliss, was in general charge of arrangements for the Cadets' visit, with actual supervision of preparations delegated to Col. C. C. Harvey, Jr., who was designated USMA project officer for the visit.

ROTC Cadets In Field

Four weeks of living and training under field conditions was the dominating feature of the six-week Antiaircraft Artillery ROTC summer camp opening at Fort Bliss on June 21. The cadets bivouacked on the Oro Grande ranges.

During these four weeks, they were given intensive training including practice firing of the principal weapons in AAA. The field training period included a two-day tactical field exercise in which aggressor forces were used.

The initial week of the summer camp, before the cadets moved to the firing ranges, was spent in carbine marksmanship training.

More than 1200 senior ROTC cadets, coming from thirty colleges and universities in the United State and Puerto Rico, attended the camp.

This was the second consecutive summer that AAA ROTC cadets from all sections of the United States and from Puerto Rico have trained at Fort Bliss.

Colonel Evans R. Crowell, head of the ROTC at Texas Western College, El Paso, Texas, was in actual charge, with Brig. Gen. F. L. Hayden, in overall command.

Artillery Inspector Visits

Major General John M. Lentz, Inspector of Artillery, Office of the Chief, Army Field Forces, made a staff visit to Fort Bliss, June 13-18.

General Lentz started his schedule with briefings on activities of the Post and of the School, on June 14.

Open House at Bliss

Some 25,000 residents of the area visited Fort Bliss on May 17, to attend an Armed Forces Day open house sponsored by Army, Navy, and Air Force installations of the vicinity.

Fort Bliss, Biggs Air Force Base, William Beaumont Army Hospital and the El Paso Naval Reserve Training Center demonstrated the practical unification of the services as hosts for a series of extensive displays.

Emphasis for the day was on the most modern weapons and equipment but due honor was paid to serviceman of an earlier date. One of the most colorful events on the program was the formal retreat ceremony in which a mounted color guard of veterans of the 1st Cavalry Division participated, wearing old-style cavalry uniforms.

Each branch of the Armed Forces—Army, Navy, and Air Force—had its own exhibit. There were antiaircraft guns, radars, directors and missiles; a Link Trainer and types of survival equipment for airmen.

Gen. Gay's Visit

Major General Hobart R. Gay, deputy commander, Fourth Army, who was stationed at Fort Bliss when it was a cavalry post, returned as an honored guest for the Armed Forces Day weekend.

He was guest speaker at the Armed Forces Day luncheon given in El Paso by the Armed Forces Committee of the Chamber of Commerce. In addition General Gay visited various installations and facilities of the post, including the Antiaircraft Artillery OCS, the 1st Guided Missile Group and the AAA Replacement Center.

Corporal Gordon K. Anderson, 1st Guided Missile Group, was chosen as representative for all troops in the area

at the Armed Forces Day luncheon.

One of 20 enlisted men of the area who were special guests at the luncheon, Corporal Anderson sat at the speaker's table with Major General Hobart R. Gay, chief speaker for the occasion.

38th Brigade Headquarters

During the past few months the brigade has had a breather and in the interval sent Major E. V. Joyce, S4, to C & GSC at Fort Leavenworth. Lt. Col. A. M. Ahrens, S3, and Captain M. L. Sinderman, Headquarters Battery commander, attended Air Ground School, then went to Exercise Long Horn as G3 and Air Action Officer. Captain A. V. Clark and 1st Lt. R. R. Hawkins, Jr., went to the Air Ground School at Southern Pines.

Several new units have been attached to the brigade in the past month. The 718th Transportation Truck Company just returned from Long Horn and the 10th AAA AW Battalion (Smbl) transferred from Camp Edwards.

The 10th Battalion is one of the oldest artillery units of the United States Army.

Training during this period has been confined previously to basic unit subjects. Extensive use has been made of aggressor personnel to test local security and test unit reaction to road blocks and attack of convoys.

Korean Awards at Bliss

Bronze Star

Lt. Col. Roy A. Tate
1st Lt. Mathew Dadich
1st Lt. Paul J. Tate
M/Sgt. James K. Dulaney
SFC Charles L. Campbell
Sgt. Billy Burns
Sgt. Richard McCurry
Sgt. Eugene B. Robinson
Sgt. William J. Sutherland

Air Medal

1st Lt. Thomas L. Kelly

Army Commendation Ribbon

Cpl. Victor M. Stark
Cpl. Kenneth K. Ellis

Certificate of Achievement

M/Sgt. Henry P. Weicks

TRAINING LITERATURE

By MAJOR B. G. OBERLIN

Field Manuals

FM 44-1, Antiaircraft Artillery Employment, has recently been printed and distributed. This manual was written at the AA & GM Br, TAS, Fort Bliss and supersedes FM 4-100, Organization and Tactics of Antiaircraft Artillery, published in 1943. The new manual contains 177 pages and 32 charts and figures. The manual outlines the organization and basic tactical principles for the employment of light, medium, and heavy AAA in air defense and surface missions.

FM 44-38, Service of Directors M9, M9A1, M9A2, and M10, is now at the printers for publication. FM 44-33A, Service of AA Fire Control System M33, will prescribe drill, operation, and maintenance for this new fire control matériel. The manual outline has been forwarded to OCAFF for approval.

AA & GM Br, TAS, plans to revise two manuals this summer. FM 44-60, Service of the 40mm Gun, will include details of the M3A2 weapon. FM 21-80, Recognition Training, will incorporate the results of a study of the methods best suited for teaching this subject.

Technical Manuals

Two technical manuals, currently at the printers, are scheduled for distribution before the end of July. They are TM 20-300, Use of Radio-Controlled Airplane Targets, and TM 44-225, Orientation for Artillery. TM 44-234, AAA Service Practice, has been forwarded to OCAFF where it is undergoing final review.

Training Circulars

OCAFF has already received a proposed training circular, Fire Control and Gunnery, T69, for final review. Proposed circulars on service of the AN/TPS 1-D and service of the Duster, both important to users of these new pieces of equipment, are in preparation.

Changes to Field Manuals

Changes to three manuals are in preparation at AA & GM Br, TAS. Changes No. 1, FM 44-4, Antiaircraft Artillery Guns, will cover the tactical employment of medium and heavy AAA as described in DA TC 18 and will discuss the use of VT fuzes. Changes No. 2 to FM 6-40, Field Artillery Gunnery, describes indirect fire methods for AAA. Changes No. 1 to FM 44-2, Antiaircraft Artillery Automatic Weapons, takes up the aspects of surface firing and contains exercises for light AAA when employed in close support of infantry and armor.

Special Texts and Army Training Tests

Two new special texts on surface-to-air missiles are in preparation. These texts will be classified.

ATT 44-8, Antiaircraft Artillery Battalion (Light (75mm) Mbl), has been forwarded to OCAFF for review before printing. ATT 44-5, AAA Brigade (Group), has been written and is being reviewed by G3 at AAA & GM Center, Fort Bliss, prior to submission to OCAFF.

Training Films

Two completed training films have been previewed and are being revised in accordance with comments made by AA & GM Br, TAS, at Fort Bliss. These films are general orientation films on light AAA with the infantry and armored division, and light AAA in close support of infantry. Nine other training films or film bulletins, all concerned with service and employment of the AAFCS T33 or the M33 trailer and acquisition radar, are in preparation.

35th Brigade In Field Positions

THE 35th AAA Brigade under Brig. Gen. Homer Case has continued to occupy field positions in the Washington and Baltimore metropolitan areas for the past two months.

During the latter part of July the brigade participated in the Joint ADC-AAC-Ground Observer Corps Team Exercise. During this period the volunteer civilian observers were used to supplement the radar warning net manned by air and antiair crews. Hostile air attacks were simulated by Air Force planes.

The 261st AAA Brigade, Delaware N.G., Brig. Gen. J. B. Moore commanding, did their summer camp training with the 35th from July 20th to August 3rd.

During the camp they had an excellent opportunity to participate in all phases of the brigade headquarters operations including the AAOC operations.

Early in August the 736th AAA Gun Battalion, Lt. Col. Frank T. Lynch commanding, will return to home station at Wilmington, Delaware, and revert to inactive status in the Delaware National Guard.

During the past year the 736th has become an important element of the brigade. The battalion will be replaced by the 89th AAA Gun Bn.

All of the brigade battalions are already training for their fall target practices to be conducted at Bethany Beach during October, November, and December.

Colonel D. D. Martin has assumed command of the 208th AAA Group in the AAA defense of Baltimore, replacing Col. Howard S. Ives who was relieved from active duty to return to his civilian position with the Connecticut State Highway Department. Col. Ives has recently been named executive officer of the 103rd AAA Brigade, Conn. National Guard.

Col. Francis A. Liwski, 35th Brigade Executive, also commands the 19th AAA Group pending arrival of replacement for Col. Martin. The group and the brigade have occupied field positions jointly.

Lt. Col. Joseph H. Orr has relieved Major J. H. Felter in command of the 71st AAA Gun Battalion. Major Felter leaves the Fort Belvoir battalion for duty in FECOM.

Lt. Col. Thos. H. Barfield has recently joined the brigade from the AA School. Lt. Col. Burton R. Brown is also expected to join in August from General Staff duty in Washington.

"Met" Tests

The 35th AAA Brigade has recently conducted a few interesting meteorological tests under 2nd Lieut. Donald D. Johnston, the officer in charge.

The tests have merely started, and accordingly no conclusive results have been reached. They are of particular interest, however, in that they appear to be very instructive for any meteorological section.

Initially the tests merely checked the standard methods of plotting and computations for ballistic winds against the determination of the same data by the simplified procedure described in the Nov-Dec. 1951 JOURNAL. This check proved to be instructive and interesting though sometimes inconclusive.

At any rate the first tests led to far more instructive tests.

The met crew can take the balloon observations for wind determination by using the SCR 584, T33, theodolite with pilot balloon, or by theodolite with a balloon borne radiosonde. In the latter test two completely independent sets of observations are made simultaneously. They may be made on the same balloon if applicable. Both sets of readings are solved by the standard plotting method to get the ballistic wind data. When that is completed each set of readings is used to determine the ballistic wind data by the simplified

(Continued on page 46)

CENTRAL AA COMMAND. Col. Donald J. Bailey, C.O., Central Army AA Command, and staff. *(L to R)* WOJG Ralph C. Gallion, adjutant; Capt. Francis W. Turnbull, asst. plans officer and S2; Lt. Col. James H. McCann, Jr., plans officer and executive; Major Roy H. Lundgren, O and T Officer; Capt. Stanley A. Swieckowski, S4; WOJG Robert E. Roswold, asst. adjutant.

THE DEVELOPMENT OF HEAVY ANTIAIRCRAFT ARTILLERY

(Extracted from "History of Heavy AA Fire Control and Matériel," by Colonel William J. Wuest)

WHEN a German airplane bombed Paris on 30 August 1914, it started a chain reaction in artillery circles that is still going on. Two months later bombing had increased to such an extent that defense from the ground became a must. History records that there were previous instances of aerial bombing—in Tripoli in 1911, and in the war between Spain and Morocco in 1913—but little or no thought had been given as to what to do about it.

Since the existent artillery in 1914 would not elevate sufficiently to engage an aerial target, crude improvisations were resorted to. Some tried means of elevating the wheels of the field gun, others experimented with dropping the trail. Everyone fired at airplanes with whatever weapons they had; usually regardless of whether or not the airplane was in range. (And sometimes by mistake at friendly airplanes.)

It was soon apparent that intricate fire control apparatus was necessary if airplanes were to be successfully engaged. A decision was made that field artillery should not be assigned the dual missions of firing at air and ground targets. An antiaircraft service was organized and specially designed equipment supplied.

To develop suitable weapons was only the beginning. The airplane was a much faster target than any previously encountered. Fuze functioning at high altitudes was known but partially. Three dimensional flight prediction just did not exist.

Estimation and adjustment was the method first used. The gun was pointed at the target somewhat similar to shooting at birds on the wing. The fuze was set by guess. The round was fired at the target and the nearness of the burst to the target observed. Then the gunners went into a huddle and decided on the necessary corrections in azimuth, elevation and fuze. By now the position of the target had changed and this added greatly to the difficulty of making predictions. Only a combination of luck and crystal ball gazing could obtain a hit by such a method of fire control. Nevertheless, it was the first method of fire control since it used the human mind as a data computer.

What was needed was the development of instruments which would determine the position of the target at a future time equal to the time of flight of the projectile. One by one the problems were solved. Two methods of position finding were developed in coordination with the instruments required by these methods to make them effective. These were the linear speed and angular travel methods.

As World War I went on, antiaircraft artillery increased in effectiveness. The airplanes resorted to night flying and as a result searchlights and sound locators were developed to increase the effectiveness of guns at night.

The pioneer antiaircraft artillerymen were confronted with a very difficult problem which, to many of them, must have seemed to be impossible. A 1920 Ordnance report had this to say on the subject, "When the complexity of the problem is considered, one wonders at the faith exhibited in the possibility of finding a solution, at the ingenuity displayed in working out the fire control devices, and at the measure of success met with by the personnel who had in hand the development of this arm of the service."

World War I gave an impetus to antiaircraft development which would have been impossible in peace. The 1914 French antiaircraft defense consisted of about ten guns and no personnel. In 1918 it consisted of about 900 guns, 600 machine guns, and 600 searchlights manned by 1,500 officers and 40,000 men. The other combatant nations expanded in like proportion.

Laboratory research, in the case of France and Great Britain, began on a high plane. The French battery commanders were for the greater part men of engineering experience. The British officers were drawn from all walks of life and very few were of the engineering profession. For this reason the French were in a better position to cope with the mathematical reasoning of antiaircraft fire control problems.

OUR antiaircraft service dates back to the fall of 1917 when a detail of 25 officers was sent to attend the Antiaircraft School at Arnouville-les Gonnesse. Although in action only four months and having only two skeleton gun battalions, our service was credited with downing 58 enemy airplanes. At the close of the war, approximately 12,000 U.S. soldiers in France were assigned to antiaircraft units.

The first antiaircraft course for officers was held at Fort Monroe, Virginia, in February 1918. It was of five weeks duration. Following completion of this course it was expected that the graduates would take further instruction at the American AA School in France. Available for conducting instruction in practice firing at Fort Monroe was one three-inch gun. According to an official statement, upon completion of the Fort Monroe course, the officer was qualified "to devise, improvise, and operate sufficient fire control apparatus to enable him to take charge immediately of an antiaircraft battery."

It is impossible to properly record the history of our antiaircraft artillery without mention of the fire control methods developed by the French. Not one round of ammunition was fired from a U.S. manufactured antiaircraft gun at an enemy target during World War I! We used French guns and fire control equipment.

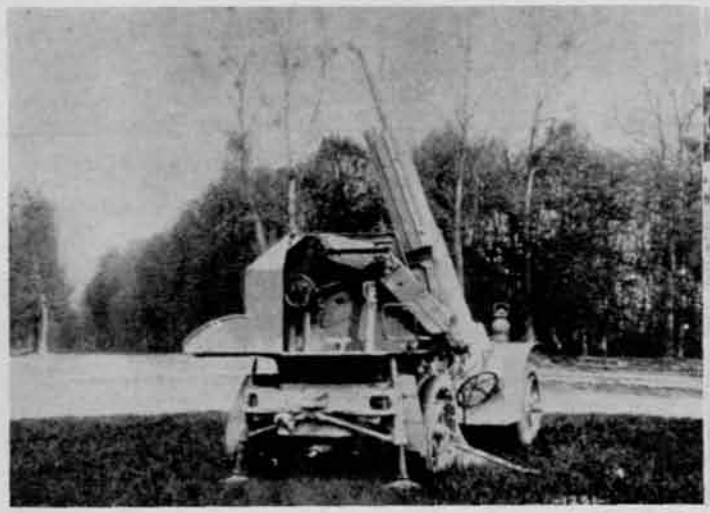


Fig. 1—75mm AA autocannon mounted on truck (French).

Fig. 2—Tachyscope.

Let us take a look at what the French had.

Before the outbreak of World War I, the French had manufactured a 75mm autocannon which could elevate to 75 degrees. It had a field of fire in azimuth of 240 degrees. Muzzle velocity was 1,850 feet per second and rate of fire was 10 rounds per minute. It was mounted on a truck and stability of a sort was provided by screw jacks.

This autocannon had been designed for the purpose of engaging balloons as targets. The pointing apparatus presumed that it was possible to make lateral and vertical adjustment of fire by direct observation of the burst.

During World War I the French modified the autocannon by emplacing it on a trailer and by improving the sighting mechanism, Fig. 1. The sighting system developed was unique for that day. The traversing gear mechanism contained a differential system which made it possible to lay the gun in alinement with the predicted future position of the target without disturbing the pointer. A second differential gear system was contained in the mechanism which controlled the setting of vertical deflections.

As previously mentioned there were two methods of determining the future position of the target as developed by the French; the linear speed and angular travel methods.

The linear speed method, also called the angle of approach method, was the first to be developed since it did not require complicated measuring instruments. Vertical and lateral deflection corrections were determined. At first, plotting boards employing graphic methods were used. For a particular altitude and speed, graphic diagrams for lateral and vertical deflections plotted in terms of azimuth and ranges, permitted determination of corrections for every 15 degrees.

The plotting board method was superseded in 1916 by instruments solving automatically the formulas for corrections. These instruments were the goniograph, sitogoniograph and tachyscope (Fig. 2). The same year the angle of approach telescope was developed. This instrument will be covered in a later article.

The goniograph determined lateral deflection corrections; the sitogoniograph determined vertical deflection corrections. These instruments which were based on slide rule principles permitted logarithmic computation of the deflection corrections.

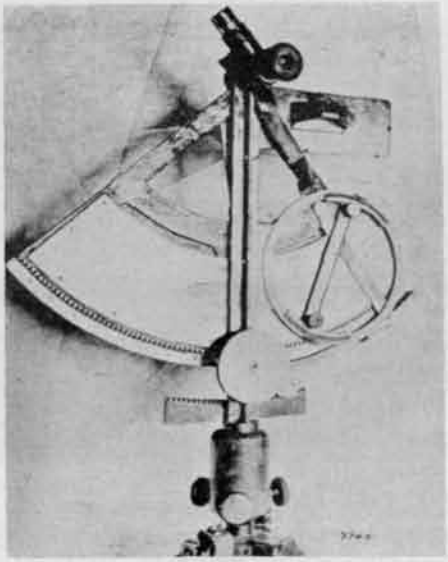


Fig. 3—Altitude telemeter, rear view (French).

At first the linear speed of the airplane was estimated. Later on the tachyscope was designed to measure the speed from the displacement of the airplane after its altitude was known. The angle of approach, determined by estimate at first and later by the angle of approach telescope, also was necessary.

The principle of the tachyscope involved the rate of travel of the airplane in a horizontal plane parallel to that at which it was flying and at a height above the instrument eyepiece proportional to the altitude of the target. The instrument consisted of a horizontal grill of concentric circles, the radius of which corresponded to definite speeds such as 30, 40, 50, and 60 meters per second. The grill was secured to a vertical support graduated in altitude thus permitting a proportional altitude setting. About this vertical support a horizontal bar bearing a peephole slide could be revolved.

In operation, the target initially was held in alinement with the eyepiece, the center of the grill and the target. Holding this alinement, the observer noted on or near which circle the objective was projected, 10 seconds later. The radius of this point permitted readily a simple calculation of the engine speed.

When the wind was blowing, this did not give the engine speed and it was therefore necessary to start the target not from the center of the grill but from a movable point or immediately below it. The directional effect of the wind was compensated for by orienting the pointer into the wind.

To determine range a one-meter base instrument manufactured by Barr &

Straud was the first instrument used. Errors were very large with this instrument if the range exceeded 6,000 meters.

The introduction of the altitude telemeter about the middle of 1915 improved considerably the accuracy of the fire control system Fig 3. The principle of the telemeter was to obtain fuze range as a function of altitude and angular height. Considering altitude to be constant during time of flight plus dead time, future fuze range could be obtained if altitude and future angular height were known. Altitude telemetry became effective only after accurate instruments were developed for measuring altitude and the introduction of an automatic corrector for determining future angular height.

The angular travel method of fire control, also known as the tachymetric method, consisted of measuring the lateral and vertical angular velocity of the airplane and multiplying these values by time of flight. Accurate results could have been obtained if it had been possible to determine the mean angular speed during time of flight. Approximate values of correction were obtained and various methods were developed to correct these approximate values to exact values. The angular travel method required accurate instruments of delicate construction. It was not until 1917 that the problems were definitely solved.

Actually there were types of instruments used; one was called Corrector Brocq (electromagnetic corrector), the other was called Corrector R.A. (a mechanical instrument).

Both of these instruments were used by U.S. troops and in our service were adopted officially. The Brocq was designated AA Data Computer Model 1916 and the Corrector R.A. was designated AA Data Computer Model 1917. These two data computers will be discussed in a later article.

AAA RTC

THE Army's only Antiaircraft Artillery Replacement Training Center has doubled in size and graduated some 35,000 soldiers trained for combat. The AAA RTC, commanded by Colonel Earl W. Heathcote, was established August 10, 1950 at Fort Bliss, Texas. Graduates are now serving in the continental United States, Alaska, Europe, and the Far East.

The primary mission of the AAA RTC is to train automatic weapons crewmen, heavy antiaircraft artillery cannoneers, director operators, radar operators, operations assistants, and aircraft warning specialists. The training program has been stepped up to eight weeks of basic and eight weeks of branch material training. The unit method of instruction is being used.

A specialist training course has been in operation since the first of this year, four classes having received training as specialists.

The secondary mission of the AAA RTC is to train basic soldiers for post units. These trainees receive eight weeks of basic training and a special five weeks advanced individual branch material course prior to returning to their parent unit.

There were six battalions within the AAA RTC in August 1951, there are now two groups, twelve battalions, and fifty batteries.

Incorporated in the AAA RTC is the leader's course battalion which has graduated 930 potential leaders since it was activated.

National guard battalions arriving at Fort Bliss, lacking trained personnel, are assisted by the AAA RTC. Men are selected to undergo a 13-week specialist training program, and returned to their parent organization.

Col. Heathcote and Staff.

A coveted award for men of the AAA RTC is to be named as "the RTC Trainee of the Month." The selection is based upon the individual's military appearance, and knowledge, training and military courtesy. The winner is taken on a tour of the AAA RTC by the commanding officer, visits the leader's and specialist courses, then to post headquarters where he is presented to the Fort Bliss commanding general. Private LaVerne D. Boeck, Auburn, Nebraska, was designated for the month of March.

A mass dismounted review staged by the branch material battalions is held periodically. With Colonel Heathcote as the reviewing officer, and Lt. Col. Santiago Guevera, commander of troops, decorations are presented men of the RTC, usually Korean veterans.

During the last week of March, branch material trainees resumed training on the Synthetic Trainer Mark I, where they gain experience in actual tracking of targets and tracer observations. On April 3, troops attending the specialist courses, tracked and fired on radio controlled airplane targets. These two types of training are now a regular part of the AAA RTC program for the branch material trainees. The radio controlled airplane targets are furnished by the 52nd RCAT detachment, recently attached to the AAA RTC.

Group commanders are: First, Colonel Geoffrey W. Sargent; Second, Lt. Col. Santiago Guevara. Battalion commanders: Lt. Col. Harold E. Graham, 1st Bn.; Col. Geoffrey W. Sargent, 2nd Bn.; Lt. Col. Arthur S. Naylor, 3rd Bn.; Lt. Col. John Martinelli, 4th Bn.; Major Fred R. Whitehead, 5th Bn.; Lt. Col. Grover Crawford, 6th Bn.; Lt. Col. Albert W. Harvey, 7th Bn.; Major Milton D. Kert, 8th Bn.; Major Winford E. Osburn, 9th Bn.; Lt. Col. Valentine T. Terribile, 10th Bn.; Major Fred Patterson, 11th Bn.; Captain James G. Hayes, 12th Bn.

Headquarters AAA RTC staff officers: Major James D. Benner, executive; Lt. Col. Elmer E. Twining, S3; Major William A. McQueeney, S4, Captain Francis B. Mathews, S1, and Captain Joseph M. Schmid, acting adjutant. Captain Robert A. Leitzell, adjutant, is currently hospitalized.

HONOR ROLL

Original Honor Roll

88th AAA Airborne Bn
Lt. Col. R. B. Barry, Jr.
228th AAA Group
Col. D. W. Bethea, Jr., S. C.
107th AAA AW Bn (M)
Lt. Col. T. H. Pope, Jr., S. C.
305th AAA Group
Col. John S. Mayer, N. Y.

Separate Commands

Army AAA Command
Lieut. Gen. J. L. Lewis
Third Army Training Center
Brig. Gen. C. H. Armstrong
East AAA Command
Brig. Gen. Wm. H. Hamilton
Central AAA Command
Col. D. J. Bailey
West AAA Command
Brig. Gen. R. W. Berry

Guided Missile Dept.

AA & GM School
Col. F. M. McGoldrick
Officer Candidate School
Col. R. H. Krueger
AAA Repl Training Center
Col. E. W. Heathcote

Brigades

32nd AAA Brigade
Col. M. W. May, Jr.
34th AAA Brigade
Brig. Gen. R. R. Hendrix
35th AAA Brigade
Brig. Gen. Homer Case
38th AAA Brigade
Col. K. R. Kenerick
40th AAA Brigade
Brig. Gen. James G. Devine
47th AAA Brigade
Col. G. C. Gibbs
51st AAA Brigade
Col. H. P. Hennessy
56th AAA Brigade
Brig. Gen. H. F. Meyers
103rd AAA Brigade
Brig. Gen. R. Y. Moore
104th AAA Brigade
Brig. Gen. V. P. Coyne, Mass.
105th AAA Brigade
Brig. Gen. A. H. Doud, N. Y.
107th AAA Brigade
Brig. Gen. J. W. Squire, Va.
111th AAA Brigade
Brig. Gen. Chas. G. Sage, N. Mex.
112th AAA Brigade
Brig. Gen. J. W. Cook, Calif.
114th AAA Brigade
Brig. Gen. G. W. Fisher

Groups

1st Composite Group
Col. T. H. Leary
2nd AAA Group
Col. C. G. Patterson
4th AAA Group
Col. L. A. Bonifay
6th AAA Group
Col. W. J. Wuest
10th AAA Group
Col. G. R. Carey
11th AAA Group
Col. W. B. Logan
13th AAA Group
Col. W. A. Cauthen
14th AAA Group
Col. H. E. Michelet
16th AAA Group
Lt. Col. G. E. Brown
19th AAA Group
Col. F. A. Liwski
65th AAA Group
Col. B. E. Cordell
197th AAA Group
Col. A. S. Baker, N. H.
200th AAA Group
Col. C. M. Woodbury, N. Mex.
205th AAA Group
Col. V. G. Hines, Wash
207th AAA Group
Lt. Col. R. G. Irish, N. Y.
208th AAA Group
Col. D. D. Martin
211th AAA Group
Col. G. F. Lineham, Jr., Mass.
216th AAA Group
Col. W. E. Johnson, Minn.
218th AAA Group
Col. V. P. Lupinacci, Pa.
220th AAA Group
Col. R. H. Hopkins, Mass.
224th AAA Group
Col. E. W. Thompson
226th AAA Group
Col. John D. Sides, Ala.
227th AAA Group
Col. P. L. Wall, Fla.
250th AAA Group
Col. A. M. Lazar, Calif.
260th AAA Group
Col. L. S. Mann
302nd AAA Group
Col. John M. Welch, Ohio
313th AAA Group
Col. A. F. Hoehle, Pa.
326th AAA Group
Col. M. D. Meyers, Pa.
374th AAA Group
Col. T. F. Mullaney, Jr., Illinois
515th AAA Group
Col. F. G. Rowell, N. Mex.

Battalions

1st AAA Training Bn
Lt. Col. H. E. Graham
2nd AAA AW Bn
Lt. Col. J. L. Butler
2nd AAA Training Bn
Lt. Col. J. H. Doyle
3rd AAA AW Bn
Lt. Col. J. P. Goettl
3rd AAA Tng. Bn.
Lt. Col. A. S. Naylor
4th AAA AW Bn (M)
Lt. Col. R. J. Connelly
4th AAA Training Bn
Maj. C. M. Smith
5th AAA Training Bn
Maj. F. R. Whitehead, Sr.
6th AAA Training Bn
Lt. Col. G. L. Crawford, Jr.
8th AAA Training Bn
Maj. M. D. Kert
9th AAA Training Bn
Maj. W. E. Osburn
10th AAA Training Bn
Lt. Col. V. T. Terribile
11th AAA Training Bn
Lt. Col. A. O. Chittenden
12th AAA Training Bn
Maj. L. E. Marlowe
15th AAA AW Bn (SP)
Lt. Col. Jas. M. Moore
21st AAA AW Bn (SP)
Lt. Col. J. W. Dry
32nd AAA AW Bn
Maj. Wm. A. Bobo
36th AAA Gun Bn
Lt. Col. G. W. Best
37th AAA Gun Bn
Maj. R. G. Duncan
38th AAA Gun Bn
Lt. Col. S. R. Kelley
39th AAA AW Bn (M)
Lt. Col. P. J. Lacey, Jr.
41st AAA Gun Bn
Maj. D. R. Ward
50th AAA AW Bn
Lt. Col. J. T. Hennessy
53rd AAA Gun Bn
Maj. J. M. Rutledge
56th AAA Gun Bn
Lt. Col. M. A. Selsor, Jr.
60th AAA AW Bn
Lt. Col. Wm. D. Ward
62nd AAA AW Bn (SP)
Lt. Col. C. E. Meadows
63rd AAA Gun Bn
Lt. Col. C. F. Coffey
64th AAA Gun Bn.
Lt. Col. D. B. Nye
65th AAA Gun Bn
Lt. Col. H. C. Brown
66th AAA Gun Bn
Lt. Col. C. M. Brown
68th AAA Gun Bn
Lt. Col. R. H. Stephens
69th AAA Gun Bn
Lt. Col. M. G. Moyer
71st AAA Gun Bn
Maj. J. H. Felter
73rd AAA AW Bn
Lt. Col. P. W. Pedrotti
76th AAA Gun Bn
Lt. Col. J. D. Gemmell
77th AAA Gun Bn
Lt. Col. W. P. Wright, Jr.
79th AAA Gun Bn
Maj. R. A. Boaz
80th AAA Airborne Bn
Lt. Col. L. W. Linderer
82nd AAA AW Bn
Lt. Col. H. K. Clark
91st AAA AW Bn
Lt. Col. R. A. Clafee
120th AAA Gun Bn
Lt. Col. H. C. Gray, N. Mex.
126th AAA AW Bn
Lt. Col. R. C. Carrera, Mass.
127th AAA AW Bn (SP)
Lt. Col. H. G. White, N. Y.
133rd AAA AW Bn
Lt. Col. E. J. Modjeske, Illinois
137th AAA AW Bn
Lt. Col. L. B. Tipton
144th AAA AW Bn
Lt. Col. R. T. Dunn
150th AAA Gun Bn
Lt. Col. L. O. Ellis, Jr., N. C.
256th AAA AW Bn
Lt. Col. R. W. Hoag, Minn.
259th AAA Gun Bn
Maj. L. T. Darcy
340th AAA Gun Bn
Lt. Col. G. V. Selwyn, D. C.
398th AAA AW Bn
Lt. Col. L. B. Dean
443rd AAA AW Bn (SP)
Lt. Col. B. A. Spiller
450th AAA AW Bn
Lt. Col. B. N. Singleton
459th AAA AW Bn
Maj. M. W. Johnson
464th AAA AW Bn
Lt. Col. R. E. Glasgow
502nd AAA Gun Bn
Lt. Col. P. G. Brown
685th AAA Gun Bn
Lt. Col. P. O. Franson, Mass.
697th AAA AW Bn
Maj. W. C. Thompson, N. Mex.
698th AAA Gun Bn
Lt. Col. F. Monico, Illinois
708th AAA Gun Bn
Lt. Col. P. L. Getzinger, Pa.
710th AAA Gun Bn.
Capt. T. T. Chisman
711th AAA Gun Bn
Lt. Col. N. J. Walton, Ala.
712th AAA Gun Bn
Maj. F. M. Buchanan, Fla.
716th AAA Gun Bn
Lt. Col. Joe R. Stewart, N. Mex.
717th AAA Gun Bn
Lt. Col. E. D. Pelzer, N. Mex.
718th AAA Gun Bn
Lt. Col. J. J. Loughran
720th AAA Gun Bn.
Lt. Col. G. A. Duke, Calif.
726th AAA Gun Bn
Lt. Col. C. F. Arnold, N. Mex.
730th AAA Gun Bn
Lt. Col. C. D. Holliday, Calif.
736th AAA Gun Bn
Lt. Col. F. T. Lynch, Dela.
745th AAA Gun Bn
Maj. E. Mountain, Conn.
747th AAA Gun Bn
Lt. Col. J. F. Kane, Mass.
764th AAA Gun Bn
Lt. Col. Wm. J. Bennett
772nd AAA Gun Bn
Col. F. S. Grant, Mass.
773rd AAA Gun Bn
Lt. Col. G. F. Slavin
804th AAA AW Bn (M)
Maj. S. N. Caudill, N. Mex.
867th AAA AW Bn
Maj. S. M. Arnold
903rd AAA AW Bn
Lt. Col. J. D. Shearouse
933rd AAA AW Bn
Lt. Col. R. M. Huston
951st AAA Gun Bn
Lt. Col. W. G. Babbitt
30th AAA Lt. Btry
Capt. W. A. Brant
Btry A, 37th AAA Gun Bn
Lt. A. B. Whitesides

Operations Detachments

115th AAA Opns. Det.
Maj. E. F. DeLean
177th AAA Opns. Det.
Maj. W. F. Hale, Va.
181st AAA Opns. Det.
Capt. C. Geek
186th AAA Opns. Det.
Maj. Wm. S. Wall, Calif.
286th AAA Opns. Det.
Capt. J. B. Stopyra, Dela.
506th AAA Opns. Det.
Capt. J. J. Niehaff
510th AAA Opns. Det.
Maj. R. H. Moser
511th AAA Opns. Det.
Capt. M. J. Healy

U.S. Army

AN AAA BN. GUARDED THE NAZI GREAT

By LT. COL. RICHARD W. OWEN

CONTINENTAL Central Prisoner of War Enclosure Number 32 was set up in the little resort town of Mondorf-les-Bains, Luxembourg in early May of 1945 by elements of the 391st AAA AW Battalion.

The battalion's first introduction to prisoner of war duty was a sudden change for troops who had shifted rapidly in the war of movement from the Normandy Beaches and whose training had never included preparation for handling POWs in general or the far touchier problem of maintaining an extra special enclosure for the highest ranking of Nazi field marshals, admirals, general staff officers and key civilian internees of the Third Reich.

On May 5th, the author was summoned and hurriedly briefed by the provost marshal on the battalion's new top secret mission:—to set up and operate a suitable center for the topflight Nazis who were even then surrendering to the advancing American, British and French forces rather than fall into the hands of the Red Army moving into Germany from the East.

"You'll probably wind up guarding Adolf Hitler himself for all I know," the provost marshal said, adding "You'd better get on your bicycle right now and pull at least one of your batteries out immediately."

Using the phone on his desk, I issued the necessary orders to the battalion executive to have Baker Battery roll as quickly as possible and also directed that certain key staff officers and personnel from Headquarters Battery be dispatched to Mondorf as well. With this accomplished, I set out directly for the new site for a preliminary reconnaissance and preparation for the arrival of troops who would have the task of preparing a secure prison for the expected "guests" of the Allied Governments.

There were conferences with representatives of G2, SHEAF, detailed planning for the job, and requisitioning of buildings to house prisoners and our own troops. To provide a work detail to augment troop labor, some 200 Wehrmacht prisoners were carefully selected for special skills and the battalion supply section, under Captain Francis M. Vaughn, labored night and day to procure everything from barbed wire to captured German medical supplies which were allocated to POW operations.

Major Elmer J. Fox, S3 (now Lt. Col.), undertook the planning of security, briefing of guard details and selection of personnel for key duties inside the inclosure. SHEAF G2 detailed a small staff of trained interrogators who were to work closely with the fallen hierarchy of Hitler's Germany in the weeks to come.

Even as the Palace Hotel in Mondorf was being refurbished and before the double barbed wire enclosure had been completed the first prisoner to be delivered was Arthur Seyss-Inquart, Nazi governor-general of Holland, who stood high on the Allied war criminal list. He was followed in rapid succession, singly and in groups, by others even before the surrender documents were signed in Rheims, Berlin and Kiel.

After fingerprinting and photographing, a thorough search of each prisoner's person and belongings was made under the direction of Captain McEwen, battalion S2. It was during such searches that small vials of cyanide were occasionally found. This was the poison which top Nazis had provided for themselves. All were identical and one such was used by Heinrich Himmler, Hitler's Gestapo chief, when captured by the British.

Goering Cured of Drug Habit

The only one to "take the cure" that summer was Hermann Goering. Upon arrival he was received in the usual manner. Equipped with sufficient luggage to take an extensive luxury cruise, he was relieved of all but the barest necessities and deprived of the services of the valet-de-chambre he had thoughtfully brought with him into captivity. This was a bitter blow to the ex-Reichsmarshal who had expected more chivalrous treatment from his captors.

Among Goering's effects was a small valise containing a large number of paracodeine pills, a morphine substitute which he took in large doses twice a day. Under the guidance of the battalion's surgeon, Goering was cured by a gradual reduction of the daily amount over a period of six weeks.

During this period the prisoners were constantly subjected to interrogations on a wide variety of topics ranging from the effects of strategic bombing to economic and political factors in Germany throughout the war.

Goering, Ribbentrop, Keitel, Doenitz and Von Papen were in constant demand as military and civilian representatives of the Allied governments visited Mondorf in search of information. Most of the prisoners were cooperative, some were anxious to state for the record their views and to give their version of events connected with Germany's war effort.

From a security point of view the American guard personnel were keyed to a high point of vigilance. It was feared that with the experience of years of Nazi occupation, local Luxembourgers might become incensed at the presence of their bitterest enemies and create a disturbance. Fortunately this never happened.

Introduction to the A-Bomb

Goering was a little morose on the afternoon of August 7, 1945. The numbing shock of Nazi Germany's total collapse into chaos, his own imprisonment and the daily reduction of his customary dosage of para-codeine tablets all contributed to the former Reichsmarshal's deep depression.

Now he was called into one of the rooms in the Palace Hotel that had been set aside for the use of allied interrogators for another tiresome interview with his captors.

On this day the Army newspaper, *Stars and Stripes*, carried a lead story with banner headlines telling of the atomic bomb that had been dropped on Hiroshima and speculated on the effect that this new development in warfare would have on the outcome of the war in the Pacific. The story was as complete as security limitations would permit and likened the explosion to the equivalent of 20,000 tons of conventional bombs in its history making blast.

Associated Press correspondent George Tucker had phoned from Frankfort, Germany, asking for the reactions of several of the top former members of the Nazi hierarchy who were being held as prisoners of war or civilian internees in what had been a luxury hotel in Luxembourg's prewar health spa.

In addition to Goering, the AP requested the views of Joachim von Ribbentrop, Admiral Karl Doenitz, Field Marshals Wilhelm Keitel and Albert Kesselring. Jacob Nagle, former chief of the Reich Postal Ministry, had been mentioned by fellow captives as having some knowledge of Germany's efforts in atomic experimentation. He was also scheduled for an interview.

Hermann Goering's first comment on the *Stars and Stripes* headline was characteristically abrupt. "I don't believe it," he said. After the article was translated he asked, "Now what will the Japanese do?" He pondered the implications and said, "If England and America have this together, the Russians will have to think things over."

This led to a discussion on the damaging effects of the blast and Goering pointed out that a lot depended upon the terrain at the target, thus neatly explaining the relatively light damage to Nagasaki where the second bomb was used a little later. He said, "A 12,000-ton bomb would have the force of a 500-pound bomb, depending upon the area of impact."

The former chief of the Luftwaffe asked why this had been announced, and was told that the news value was great and the existence of the bomb was disclosed with the dropping of the first one on Japan. He expressed the opinion that large battleships were now impractical and in commenting upon America's scientific achievements said, "At all events this is a mighty accomplishment." He added, "I don't want to have anything to do with. I'm leaving this world."

Goering was a realist. While up to the time, he didn't know precisely what was in store for him, he was aware that an international tribunal was forming and that his chances for ultimate survival were extremely slim. Nürnberg was yet to come.

Admiral Karl Doenitz was escorted into the interrogation office and seated himself a little uncertainly. Cigarettes were passed and the A-bomb story was freely translated. Still in uniform but deprived of his swastika-laden decorations, Doenitz maintained a frozen dignity but he was usually cooperative with his questioners.

He was silent for a moment while he digested the implications of this new development. He was asked if he had knowledge of the atomic experiments made in Germany and replied, "We tried to solve the question in 1943 but did not succeed due to lack of means."

Asked what effect this would have on Japan's war effort, he said, "I don't know what the effect upon the Japanese war effort will be but the Japanese population will be destroyed by it."

Doenitz expressed surprise that America had succeeded in this development, saying, "We were afraid you would do it sooner, in time to use against Germany, since America had the power and material to accomplish it."

As a preventative to future wars, Doenitz stated that "A weapon of this kind would certainly prevent future wars. It could destroy mankind despite the San Francisco Conference." He added, "It's important that the Russians do not get hold of it."

He then asked if the news story was truth or propaganda and was told that it was true and that truth was the best propaganda. He agreed that this was so, calling the A-bomb "a terrible thing." I expressed the hope that it would never be used again and the Admiral silently replied with the sort of look that must have made his submarine wolf-pack commanders quail upon returning from an unsuccessful mission.

Field Marshal Albert Kesselring expressed no particular surprise when the news was explained to him. The former German commander always maintained a correct degree of aplomb and always gave carefully considered statements under questioning. Like most of the others of the Nazi high command, he was uniformly cooperative and his statements on military subjects reflected his long training and professional attainments, not at all unique among the lifelong Prussian officer class.

In summing up his thoughts on the bomb, he said, "The introduction of the atomic bomb means a yet unsurveyable progress in aerial technique and tactics; and for the war on land and sea, perhaps a revolution. The 20,000-ton effect of a bomb is tantamount to wiping out a target above the surface of the ground or water. The commitment of large bomber formations with such bombs will result in the annihilation of a zone. Human lungs, even at a great distance, will not withstand the pressure of the blast. Therefore this bomb will, in addition to its effect upon lifeless targets, replace the fragmentation effects of existing bombs and grenades in all those cases

where the pressure effects cannot be neutralized.

"The fuze and transmittability of the small bomb's effect on surrounding water, will determine whether the new bomb can replace sea mines or multiply their effect. If the 20,000 tons can be transformed directly into water pressure, then this bomb, or the dropping of masses of such bombs, is a downright crisis in naval warfare.

"If the bomb has little weight or bulk, then a small number of planes can replace present large formations. To put it differently, smaller and hence cheaper and faster planes can achieve the same results. Other things being equal, the range of raids can be increased."

Kesselring continued his dissertation and pointed to possible defense measures. He suggested the "increase of efficiency in interceptor planes and in antiaircraft artillery." He also pointed to the "possibility of creating electrical interference with the efficiency of the engines of bomber planes." A problem that German scientists of World War II were busy seeking an answer to.

Field Marshal Wilhelm Keitel, who was later hanged at Nürnburg, had been Hitler's chief-of-staff of the OKW (Obercommando-Wehrmacht). Although a model prisoner of war, he was shunned by many of the old-line professional German officers because of his stubborn loyalty to the Hitler regime, which was despised by most of them. Keitel was regarded by his contemporaries as a political opportunist who had seen several heads of the regular German army replaced when their professional knowledge disagreed with Hitler's intuition.

I asked him if an atom bomb could have been one of the secret weapons in the process of development which were frequently mentioned in German propaganda broadcasts. Keitel replied, "If our experiments had gotten so far that it could have been used as a weapon of war, I'm sure Hitler would have mentioned it." He added that Professor Osenbert, head of the Reich Research Council, had visited him in March of 1945 and did not mention it, nor did Hitler at that time.

"I don't know enough about its full possibilities to judge," was his reply when asked what effect the bomb would have upon the prevention of future wars.

Keitel made it plain throughout his captivity that Hitler ruled by never letting one department know what other branches of the Nazi government were doing. On the atom-bomb development he professed to have no knowledge other than "I believe our scientists were doing as well as could be expected but they had not gotten beyond the experimental stage and laboratory theory. This work was kept very secret in Germany and I didn't know anything about it except that the scientists were working hard to perfect it."

An interesting sidelight took place during the interview with Keitel. I questioned him on the use of poison gas during World War II. He stated that the Germans had never made use of gas at any time because it was realized that Allied retaliation would have been carried out on a scale that Germany could not hope to match. He appeared to be well informed upon the quantities of lethal chemical agents available to the Anglo-American forces and knew that the German supplies were vastly inferior.

Keitel said, "At one time we feared the Allies would make use of poison gas against the Reich. Your press and radio made so much publicity about it that we felt that you were leading up to a justification for its use."

He did no moralizing on the reasons for or against the employment of gas but stated "there would have been no tactical advantage to us and the reprisal would have been too horrible."

At one time Keitel feared that Germany would be accused of using gas. An Allied fighter airplane strafed a German railway train which was transporting several tank cars of chemical agents. The train was destroyed and a quantity of gas was released. Members of the train crew were killed but no other damage was done and no notice appeared to be taken of the incident by the Allied forces.

Keitel felt that the future use of atomic bombs might be cancelled out in much the same manner that poison gas was during the recent war.

During the course of the conversation with Keitel, he stated that Jacob Nagel had recently delivered a lecture to the other prisoners. As Postal Minister of the Reich, he had been connected with atomic research and was familiar with such developments as had taken place in Germany.

Upon questioning, it became evident that his scientific knowledge of nuclear fission was meager but he was clearly familiar with some of the work being done. He stated that "German scientists were at work on this problem and they had been using what had been the largest cyclotron in Europe (one and a half million volts). These experiments were carried on in laboratories in Berlin and two new cyclotrons had been obtained (ten million volts each) but they had never been put into operation."

Nagel also remarked that "America was considered well ahead in this experimentation and had a great many cyclotrons in use. So far as I know, the German experiments met with no practical success." He added, "I don't think Hitler expected any immediate results for practical use. If he had, he would have said so."

He expressed great surprise at our success with the A-bomb and said, "We had considered it as only a theory difficult to put to practical use."

Joachim von Ribbentrop, former Foreign Minister of Hitler's Reich, gave a diplomat's view of the advent of this newest of man-made horrors. His reactions dealt with the political effects of the new weapon, and his gradual recognition of its potential in terms of power politics was the most interesting to witness of all of the interviews.

When confronted with the *Stars and Stripes* article, his emotions were mixed. He stated that he knew in a general sort of way that scientists had been working on the smashing of the atom but he had no information of the nature of this. He had always regarded experiments of this type as "something out of Jules Verne, something mysterious and fantastic." He continued, in cultured English, that he had heard, as any school boy had, that if one could split the atom one would have enough energy to sail a steamer across the ocean. He had heard this was possible theoretically but could not himself understand the meaning of it.

When the bomb story was read to him in detail he came to a full realization of our achievement and, as though thunderstruck, said, "This ends everything—this is extraordinary—Good Heavens! This means the revolution of everything if you have that. It would mean, for the United States, domination of everything as a political effect. It means the end

of all wars, as no one would be so stupid as to even think of war with such instruments in being."

Warming to the subject, he said, "Providence has granted to mankind an opportunity to end all wars." Asked about the effect upon Japan, he said, "It will not only shorten the war but finish it completely."

He reiterated that this development would give "absolute domination for America" and "If this is available to everybody, human nature can heave a sigh of relief as no one would use it," and again, "It will upset everything, every power on earth." He added that "Hitler once or twice talked about the smashing of the atom and had heard that this problem had been theoretically solved."

Ribbentrop was more emotionally aroused than any of his fellow prisoners. He was usually cooperative but he had been described by one Allied interrogator as a cold cynical liar. This was perhaps an apt description of the former champagne salesman whose first diplomatic exchange of note was when he greeted the Throne of England with a resounding Heil Hitler and a Nazi salute upon presentation of his credentials as Hitler's Ambassador to the Court of St. James.

During the period, American troops were comfortably quartered in many of Mondorf's hotels, living in a manner to which they had been too long unaccustomed after months of field soldiering.

In early August, Prisoner of War Enclosure No. 32 was closed and the principal members of the Nazi gang were transferred to Nürnburg to occupy cells in the high-walled city prison.

For the second time the 391st set up a prison for the major war criminals.

Gen. Lewis Promoted to Three Stars—Now Heads AAA Assn.

MAJOR GENERAL JOHN T. LEWIS, Commanding General, Army Antiaircraft Command, was recently promoted to the grade of Lieutenant General. This comes as good news to the Antiaircraft Artillery everywhere. It highlights the long and distinguished career of Lieut. General Lewis, and also marks the recognition of the Army Antiaircraft Command as one of the Army's major commands.

He assumed his new command on April 28th, relieving Major General Willard W. Irvine as the latter retired. He had previously commanded the AAA and GM Center at Fort Bliss, Texas since October, 1950.

As a battery commander and young staff officer General Lewis established a reputation years ago as an artilleryman. More recently in the war and since, his notable achievements have been as an able commander and army administrator. Long before the economy program came in fashion General Lewis was hammering away to close out installations no longer needed in Europe, and making enemies as he did it. At the same time he was achieving business like administration and economy in men, money, and supplies for the United States Government.

The Army Antiaircraft Command comprises all the Army units assigned to the Air Defense in the United States. It is a part of the Air Defense Command, commanded by General Benjamin Chidlaw. The Headquarters are located by those of the Air Defense Command at Ent Air Force Base, Colorado Springs, Colorado.

Named President AA Association

Gen. Lewis was elected President of the U. S. Antiaircraft Association by the Executive Council on 8 June. He was elected to serve through this calendar year to fill the unexpired term of Major General Willard W. Irvine, who resigned following his retirement on April 30th.

Maj. Gen. L. L. Lemnitzer was elected Vice-President at the same time to serve till December 31, 1953.

Lt. Gen. John T. Lewis

General Officer Assignments

Changes at Bliss-EAAC

Brig. Gen. Hobart Hewett, formerly commander of the 31st AAA Brigade, Fort Lewis, Washington, has just assumed his new duties as the Assistant Commandant, the AA and GM Branch, The Artillery School at Fort Bliss, Texas.

Brig. Gen. Frederick L. Hayden, formerly Assistant Commandant of the School, will relieve Brig. Gen. Wm. H. Hamilton as Commander of the Eastern Army AA Command at Middletown, New York, in August.

General Hamilton, member of the 102nd AAA Brigade, has held the command for the past few months since Maj. Gen. Paul W. Rutledge departed for Europe. General Hamilton will now revert to inactive status to resume command of the 102nd AAA Brigade, N. Y. N. G.

General Mickelsen Commands AA and GM Center

Major General Stanley R. Mickelsen arrived at Fort Bliss early in July to assume command of the AA and GM Center. The assignment was not entirely new to him. During World War II General Mickelsen commanded the AAATC at Fort Bliss. Again from 1947 to 1950 while on duty as assistant commandant of the Artillery School at Fort Sill, General Mickelsen found himself intimately associated with the problems of the School and the Center at Fort Bliss.

General Mickelsen has been a strong proponent of the merger of the Field Artillery, Antiaircraft, and Guided Missile elements of The Artillery School.

During the past three years General Mickelsen has served in Washington as the Deputy G3 for Guided Missiles. With a second Guided Missiles hat also in the G4 office he was able to exercise great influence in modernizing and expediting the Army's program in that field.

Gen. Weible From FECOM to SHAPE

Major General Walter L. Weible, formerly commander of the Japan Logistical Command, was transferred in July to Headquarters SHAPE in Paris. No announcement has been made as to General Weible's new assignment; however, it is a good guess that General Ridgway has an important logistical job for him.

Gen. Evans Leaves R.O.A. Post

Brig. General E. Arthur Evans, Executive Director of the Reserve Officers Association, has recently accepted appointment as the City Manager of Miami, Florida, effective September 1st.

A charter member of this Association, General Evans has long been active in antiaircraft affairs. In World War I he was commissioned at the Officers Training School at Fort Monroe and later served as an instructor there.

From 1929 to 1940 he commanded the 977th CA (AA) Reserve Regiment in Los Angeles, during which time the regiment won the Coast Artillery Trophy as the outstanding CA reserve regiment.

In 1942 he was appointed a brigadier general and assigned to command the Florida subsector of the Eastern Defense Command. In 1944 General Evans came to Washington where he served on the War Department General Staff until he was relieved from active duty to assume his present position as Executive Director, R.O.A.

Since 1945 General Evans has established a reputation in Washington and across the country by his aggressive actions to secure legislation and national defense policies favorable to the development of a strong Organized Reserve Corps.

General and Mrs. Evans plan to move from Washington and establish their home in Miami in August.

Elected to replace Gen. Evans was Col. Charles M. Boyer who for the past six years has been executive officer of ROA.

General Officer Promotions

The promotions of Brigadier Generals Legare K. Tarrant and Robert J. Wood were recently announced.

Gen. Tarrant Heads 52nd AAA Brig.

General Legare K. Tarrant graduated at USMA in 1928 and was commissioned in the CAC.

In World War II he served with the First Fighter Command at Mitchel Field until 1943 when he was transferred to the China-Burma-India theatre to serve throughout the War as General Stratemeyer's AA officer in the Air Command, C.B.I.

Since the war, General Tarrant attended the National War College and served a tour in Strategic Plans Branch, G3, Department of the Army General Staff and with the Joint Chiefs.

His last assignment was on the staff of the Alaskan Command at Fort Richardson until he took command of the 102nd AAA Brigade at Fort Washington, New York in April. When that brigade returned to inactive status with the New York National Guard it was replaced by the 52nd AAA Brigade which Gen. Tarrant now commands.

Gen. Wood Commands 53rd AAA Brig.

Brig. Gen. Robert J. Wood graduated from USMA in 1930 and was commissioned in the CAC.

During World War II he served with AAA in Newfoundland, England, and North Africa. He participated in the landing at Salerno and served throughout the Italian campaign in the G3 Section of General Mark Clark's Fifth Army.

Since the war, General Wood has served in the Plans and Operations Division of the War Department General Staff and for one year as Military Aide to Secretary of Defense Forrestal. He attended the National War College and served on the faculty there for two years. In his last assignment he accompanied General Eisenhower to Paris where he headed the SHAPE initial planning group, subsequently becoming Secretary of the Staff at SHAPE.

In May he took command of the 53rd AAA Brigade in Swarthmore, Pa., where he serves in the Eastern Antiaircraft Command in charge of the AAA defenses of Pittsburgh and Philadelphia.

Retirements

Colonel Abram V. Rinearson retired at Fort McPherson, Georgia on July 31st after forty years of service. His last assignment was with the ROTC in the high schools of Atlanta.

* * *

Colonel Shuey E. Wolfe will retire at Cincinnati, Ohio on August 31st after thirty five years' service. He has been serving as senior instructor for the ORC in the Cincinnati District.

News and Comment

31st Scores in Public Relations

The good neighbor policy paid off for the Army in Seattle, Wash., when an editorial appeared recently in the *Seattle Post-Intelligencer* praising the Army for a fine public relations job in that area.

This came about as a result of the Army's attitude toward civilian protests raised against the establishment of an antiaircraft gun position on a Seattle golf course.

Although the Army was under no obligation to pay any further attention to the objections by the property owners in the neighborhood—once it had legally acquired the land for the proposed gun site—they got together with the residents and listened patiently to what everyone had to say.

As a result, all possible concessions were made and the Army came up with a compromise plan which came as close as possible to satisfying everyone.

According to the editorial, "Everyone who followed the discussions . . . (between the Army, the Armed Forces Advisory Committee, law firms, Seattle School Board, which was also interested in the property, and the residents in the area) . . . should come out of the experience with a new respect and regard for the United States Army."

Full credit was given to the "man primarily responsible for the happy outcome of what could have developed into an acrimonious dispute—Brig. Gen. Hobart Hewett, commanding general of the 31st AAA Brigade at Fort Lewis—whose duty is to provide the Pacific Northwest with protection from bombers in case of attack."

The Seattle paper remarked that General Hewett and his staff proved themselves to be "good neighbors" during the entire controversy over the antiaircraft gun position.

As a result the Army has made a lot of good friends in Seattle.

D.C. Guard at Bethany Beach

The 340th AAA Gun Bn, Lt. Col. George V. Selwyn, commanding, encamped at Bethany Beach, Delaware from July 6th to 20th. Along with them in the shore camp were the other District Guard units, all under command of Maj. Gen. Wm. H. Abendroth.

As usual the 90mm Antiaircraft gun firing at the sleeve targets took precedence among the training activities. Each afternoon of the second week was devoted to such firing.

The all-night sham battle between the 340th as the defending force and all the other units as aggressors also attracted wide attention.

Colonel Joseph B. Hafer was chief of the inspection team for the camp. Col. John F. Kahle and Lt. Col. Edward W. Quinlan attended camp as senior RA instructors.

National Guard AAA Units Reverting

Among the National Guard AAA units completing their tours of active federal service are:

51st AAA Brigade, Pennsylvania, is being replaced by the 45th AAA Brigade, in August. Col. Harold P. Hennessy remains in command of the new unit.

The 711th AAA Gun Battalion, under Lt. Col. N. J. Walton, will return to Alabama in August and will be replaced by the 86th AAA Gun Battalion.

In September the 711th AAA Gun Battalion will revert to inactive status and the 99th will be activated to replace the Guard unit.

The 224th AAA Group will likewise revert in August, returning to Virginia under Col. Edwin W. Thompson. Col. Arthur Arthur C. Peterson commands the newly activated 24th AAA Group which will replace the Virginia group.

The 226th AAA Group phases out and returns to Mobile, Alabama under Col. John D. Sides in early September. Col. Henry D. Lind commands the 26th AAA Group which will take over from Col. Sides' unit.

CAMP STEWART

The Clare H. Armstrong Cup presented by Brigadier General Armstrong to Lieutenant Colonel Mark Selsor, commander of the 56th AAA Battalion at Camp Stewart, as recognition for his unit's proficiency in firing. Others are 1st Lt. Frank Shaw, General Armstrong's aide, and Sergeant First Class Samuel H. Bowens, 56th Battalion, who received the Bronze Star for service against the enemy in Korea.

Colonel Hoehle Commands AAA ORC in Camp

The Second Army AAA ORC units were formed in a provisional brigade for the annual summer camp at Fort Miles, Delaware July the 6th to 20th. Colonel Armand F. Hoehle, commanding the 313th AAA Group, Pittsburgh, Pa., commanded these units through the very active and instructive camp. Lt. Col. Harry A. Edwards was the executive.

Colonel John M. Welch commanded the 302nd AAA Group of Cincinnati, Ohio, which included the 453rd AAA AW Bn of the Cleveland, Ohio, area under Lt. Col. Paul W. Rogers, and the 199th AAA AW Bn of the Columbus, Ohio, area under Major Luke R. Laughner. The 301st AAA Opns. Det. under Major George Tollini was in camp with the 35th AAA Brigade in Washington area—Lt. Col. Alfred E. Murphy is the group executive.

Colonel Martin D. Meyers commanded the 326th AAA Group of Philadelphia with Lt. Col. George S. McKee as his executive. The 326th Group included the 387th AAA AW Bn of Wilmington, Delaware under Lt. Col. Robert Wetherall and the 457th AAA AW Bn of Baltimore under Lt. Col. John S. B. V. Shriver. The 304th AAA Opns. Det., a regular member of the Philadelphia group, took its active duty training with the 35th AAA Brigade in the Washington area.

All of these Second Army AAA units have trained together each summer for several years, which was evident in the teamwork and pace being maintained. The second week of camp was devoted fully to AAA firing on the Dewey Beach Range.

Btry B of the 398th AAA AW Bn, Camp Edwards, Mass., furnished the weapons, AAA instructors, and maintenance support.

One extracurricular event of typical interest and style was the fine entertainment put on by Major Howard Schwartz, 313th Group S4, and a fine staff on Monday night, July 14th, for a group of twenty-eight handicapped youngsters, six to fourteen years old, who were vacationing at Lewes, Delaware, nearby. In short order they were manning a 90mm gun, riding a duck, wearing army helmets, and fully enjoying the program, the refreshments, and the band concert by the 322nd ORC Army Band of Johnstown, Pa., under Mr. Burkhart.

During the same period Colonel Harry C. Bailey as commander headed up the Wilmington, Delaware AAA ORC School in camp. Attached or assigned to the school were a total of 86 officers taking their summer camp training. They included groups from other ORC schools in the Second and Third Armies.

Lt. Colonels J. E. Cook, Jr., Anthony J. Maiale, Chester W. Mebus, John B. Quinn, and Macon Stroud headed the list of the staff and faculty.

Colonels Henry M. Alford, Jack W. Eichinger, B. T. Ferguson, Everett A. Haygood, and Arthur C. Michael of the Third Army Area and Colonel Michael A. Gross of the Second Army led the list of students.

The Army and Air Defense

In his testimony the other day before a Senate Appropriations subcommittee, General J. Lawton Collins placed emphasis on a fact that is not generally realized. The fact is this: That the Army is playing a role of vital importance in carrying out the recent order for a sharp intensification of the Nation's defenses against air attack.

Such defenses, in the minds of many Americans, are visualized as being almost exclusively the responsibility of the Air Force. In the popular view, they also have been oversimplified into a system of radar warnings and around-the-clock vigilance by specially organized units of interceptor planes. Actually, however, as General Collins has made clear in his capacity as Army Chief of Staff, they involve considerably more than that, not the least important of their elements being ground action.

In fact, as General Collins has testified, ground fire is one of the most effective defenses against air attack. During the Second World War, for example, we lost "many more" fighters and bombers to the enemy's land-based guns than to the enemy's planes. Similarly, such guns have accounted for 87 per cent of all the United Nations aircraft that have been destroyed thus far in combat with the Communists in Korea—a statistic that dramatically demonstrates why the Army, though earthbound, must nevertheless deal actively with the sky.

Accordingly, one of the Army's major missions today is to build up its firepower to cope with aerial attacks on the continental United States and on our troops and bases overseas. To that end, it has deployed its antiaircraft units around key atomic plants, strategic industrial centers and vital military installations at home and abroad. At the same time, for the same defensive purposes, it has been equipping itself with special weapons of various kinds, some of them highly advanced and others still in the development stage.

These weapons include radar-controlled "Skysweeper" guns and supersonic guided missiles and free rockets. According to General Collins, the progress we have made with one of the guided missiles—the NIKE—"is most encouraging and we have already achieved hits on maneuvering drone aircraft at great ranges and altitudes." Indeed, given things like the NIKE in sufficient quantity, the Army should be able in time to establish a genuinely formidable ground defense against aerial assault.

As of today, however, it would be foolhardy to imagine that such a defense exists. True enough, since the outbreak of the Korean war, the Army has increased the numbers of its active antiaircraft battalions from 48 to 110, but the increase, as General Collins has pointed out, is still far short of wartime requirements or what is needed in this extremely dangerous period when ground firepower—together with other deterrents against aerial attack—ought to be stepped up as fast as possible in proportion to the threat confronting the Nation.

That threat is too big and real to be countered with half measures. Along with other members of the Joint Chiefs of Staff, Collins has done well to warn the Senate against supporting the spending ceiling and budget cuts that the House has imposed on the armed forces for fiscal 1953. The Army's role in air defense is only one of the things involved, but it is crucial enough to illustrate how such "economizing"—if finally enacted—could add up to folly of the most reckless kind.

Editorial reprinted from the June 22 edition The Sunday Star, *Washington, D. C.*

To the Editor

I am engaged in preparing the history of the 32d AAA AW Battalion. We have received the official statement of lineage and battle honors from the Department of the Army which gives only a rough outline for the proposed history.

We find that since 1924, we derived from companies formerly composing the Second Battalion of the 14th Coast Artillery Regiment, the 169th Coast Artillery Battalion, and the 477th Antaircraft Battalion, these are the organizations we are interested in.

We are mainly interested in the names of commanders, where the various units served, individual and unit citations, any other information of historical value.

Any information that JOURNAL readers can give will be appreciated.

ARTHUR B. HILL
Capt. Arty.

32nd AAA AW Bn
APO 994

To the Editor

It is always a pleasure to receive a letter from the Antiaircraft Association, and especially one requesting an article about our organization. We would be more than happy to grant your request for the article on Skysweeper training in this unit, and will just as soon as we can get it past the Public Information Officer.

The P. I. O. here at Fort Bliss, Major Brandt, has gone to bat for me on this problem, but hasn't been able to get on base yet. Yesterday, after receiving your letter, I phoned him again requesting a release for the JOURNAL. Same story as last Month, when we fired a VIP shoot for the U.S.M.A. visitors.

We'll break through some day.

WILLIAM A. BRANT
Captain, Arty.

Rebuttal On Calibration Fire

To the Editor:

Referring to the article on Calibration

Fire, by Captain Raymond F. Aquilina, in the May-June issue, it is apparent some points have been overlooked.

Evidently the size of targets considered normal, for medium and heavy antiaircraft weapons has not been considered. The following measurements were obtained by using the average measurements of U.S.A.F. planes listed in *FM 30-30.*

Type	*Length*	*Wingspread*
Fighters	37′	42′
Light Bombardment	52′	69′
Medium Bombardment	95′	122′
Heavy Bombardment	162.6′	230′
Transport	64′-123′	95′-200′

Considering the size of targets shown above, it is apparent that with the .2dF correction applied and using the dispersion ladder for range, we can now expect fifty percent of the rounds to have effect on a target considered normal to AAA instead of the sixteen percent expected when the correction has not been applied.

Only a right to left course was considered in illustrating the problem, although the arguments are valid for a left to right course. In considering other types of courses, we get a far different picture as shown below. The dispersion ladders are not considered.

	COURSES	
	Without Corrections	*With Corrections*
Incoming	62 yds short	30 yds over
Outgoing	62 yds short	30 yds short
45° Incoming	62 yds short	20 yds over, 30 yds astern.
45° Outgoing	62 yds short	20 yds short, 30 yds astern.

It would appear that if the size of the target, and the dispersion ladder are taken into consideration, a far greater percentage of hits can be expected if the x.2dF correction is applied.

It was pointed out that prior to calibration fire, the guns of a battalion should be regrouped to minimize differences in muzzle velocity. It is felt that if this regrouping had taken place, and unless the guns had had an excessive number of rounds fired through the tube, that a correction of .2dF would be excessive.

No attempt will be made to discuss which part of an aircraft the radar will track when in automatic, but during visual tracking on a firing course, it is customary to track the front, or center of mass of the aircraft. The reason for discussing this point is readily apparent, since it will determine how far ahead or astern, or over, or short the burst will be.

LAWRENCE B. PETERSON
Captain 65th AAA Gun Bn.

To the Editor

The meteorological section of this battalion conducted a series of trial runs in December 1951 to obtain ballistic wind data as outlined in the November-December 1951 issue of the AA JOURNAL. The results were encouraging and the new method was used in computing met messages during service practice fired by the battalion in March 1952. Met messages obtained in this manner proved as effective as messages computed as outlined in TM 20-240. The battalion average score for the service practice was higher than scores fired in the past three years although this cannot be attributed entirely to the type met message used.

The following conclusions were reached after a thorough trial of the new method for obtaining ballistic wind data:

a. It is simple and easy for meteorological personnel to master.

b. Two men are saved using the new theodolite method and one man when using the radar method. This saving of manpower is made possible by the elimination of plotters in both methods.

c. Twenty to thirty minutes are saved when using the theodolite method and fifty to sixty minutes when using the new radar method. This saving of time is possible because computing is done as the data is recorded.

d. Meteorological personnel conducting the tests doubt the accuracy of wind azimuth when wind direction varies 500 mils or more between the surface and zone 10. The best accuracy is obtained when wind direction does not vary more than 200 mils.

Ballistic wind data obtained by the new method has proven in this unit to be sufficiently accurate for AAA purposes and the saving of time and personnel outweighs the slight inaccuracies which may result.

RALPH A. BOAZ, Major, Arty.
79th AAA Gun Bn.

(Continued from page 34)

procedure using the wind speed computer.

Thus for each standard altitude, or for each line in the met message, four solutions are arrived at. The enlightening fact about this is that the four solutions are rarely identical. Comparison and analysis are instructive. If the two standard method solutions agree more closely than the two simplified solutions, that would indicate superiority of the standard method, and vice versa. Any one solution at variance with the others suggests error.

One test was conducted with a slight variation in that the radar balloon was released and tracked by the SCR 584 at the station and by a T33 on battery site near by. Simultaneously a Pibal was tracked by a theodolite at the station.

As the T33 was about 3000 yards from point of release the simplified procedure could not be used with its data.

The resultant ballistic wind data are tabulated below for standard altitudes five (6000 ft.) to eleven (30,000 ft.), showing in normal manner wind azimuth in hundred mils and speed in miles per hour.

A study of the tabulated results immediately suggests the possibility of error in the ballistic wind data determined from the SCR 584 readings by the standard method. The T33 results, very consistent, are also consistently high in wind azimuth suggesting check on orientation.

For the past month the station has also turned out ballistic densities and temperatures based on radiosonde soundings.

Met Line No.	THEODOLITE (Pibal) Standard Azm.	Speed	Simplified Azm.	Speed	SCR 584 Standard Azm.	Speed	Simplified Azm.	Speed	T33 Standard Azm.	Speed
5	11	12	12	13	12	12	14	11	12	12
6	12	13	12	14	11	15	12	11	13	13
7	11	13	10	15	10	18	11	13	12	13
8	10	15	10	17	09	21	10	16	11	16
9	10	17	09	21	07	29	08	19	10	18
10	08	19	06	27	06	28	06	23	08	23
11					05	33	05	26	06	28

ARTILLERY ORDERS

DA Special Orders Covering May 1, 1952 through June 30, 1952.
Promotions and demotions not included.

COLONELS

Adams, Gilbert N., OAS of A 8502nd AAU, Washington, D.C.
Barchan, Stanley S., Far East Command, Yokohama.
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Blandford, W. O., EUCOM, Bremerhaven, Germany.
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Goodrich, Walker R., Joint Staff OJCS 8485th AAU, Washington, D.C.
Harrison, Richard H., Off of TIG 8539th AAU, Washington, D.C.
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Perry, Miller O., ARWAF Det, 8658th AAU w/sta. Army Advisory Group, Air University, Maxwell AFB, Ala.
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Speiser, R. G., Far East Command, Yokohama.
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Thompson, M.H., Far East Command, Yokohama.
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Wertz, George M., Jr., Armed Forces Staff College, Norfolk, Va.

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Clements, Thomas H., Stu Det CGSC, Fort Leavenworth, Kansas.
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Ripley, Lyman H., Far East Command, Yokohama.
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Shemwell, Victor B., EUCOM, Bremerhaven, Germany.
Shivers, George W., Jr., USA Alaska, Fort Richardson.
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Wood, H. G., Stu Det CGSC, Fort Leavenworth, Kansas.
Young, Robert E., OAC of S G 1, 8531st AAU, Washington, D.C.

MAJORS

Aleveras, James A., 4055th ASU 1st GM Gp., Ft. Bliss, Tex.
Bartlett, Eben B., Jr., EUCOM, Bremerhaven, Germany.
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Hale, William F., Far East Command, Yokohama.
Haydock, Charles E., Jr., Far East Command, Yokohama.
Haymaker, Gerald L., Stu Det Arty Sch, Ft Sill, Okla.
Holst, William W., Far East Command, Yokohama.
Jackson, Charles F., 11th AAA Group, Fort Tilden, N.Y.
Jones, Willard L., Far East Command, Yokohama.
Matthews, William G., 102nd AAA Brigade, Ft Wadsworth, N.Y.
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Parsons, Marcus L., Stu Det CGSC, Fort Leavenworth, Kansas.
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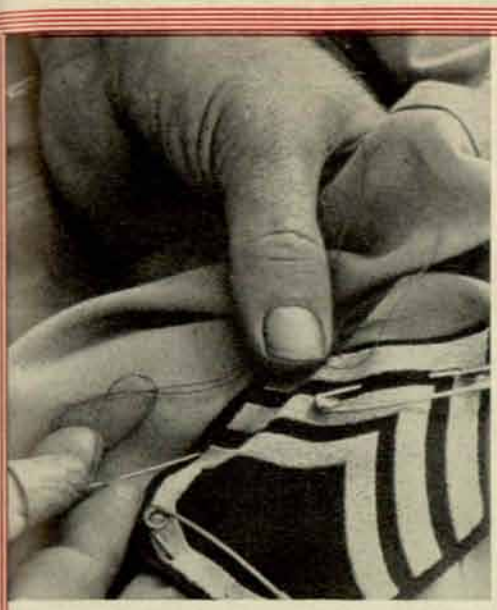

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